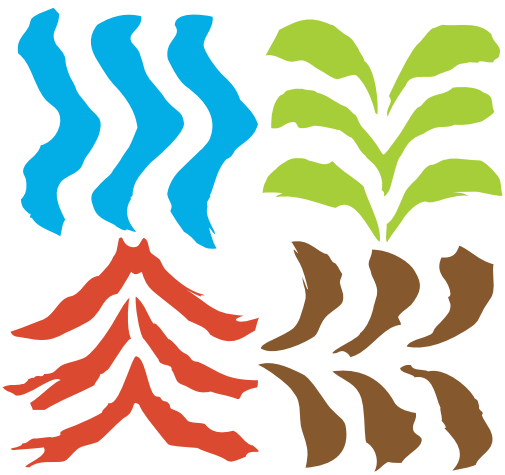
20th WORLD CONGRESS OF SOIL SCIENCE

In Commemoration of the
90th Anniversary of the IUSS



Soils Embrace Life and Universe

June 8-13, 2014 Jeju, Korea
www.20wcss.org

PROCEEDINGS

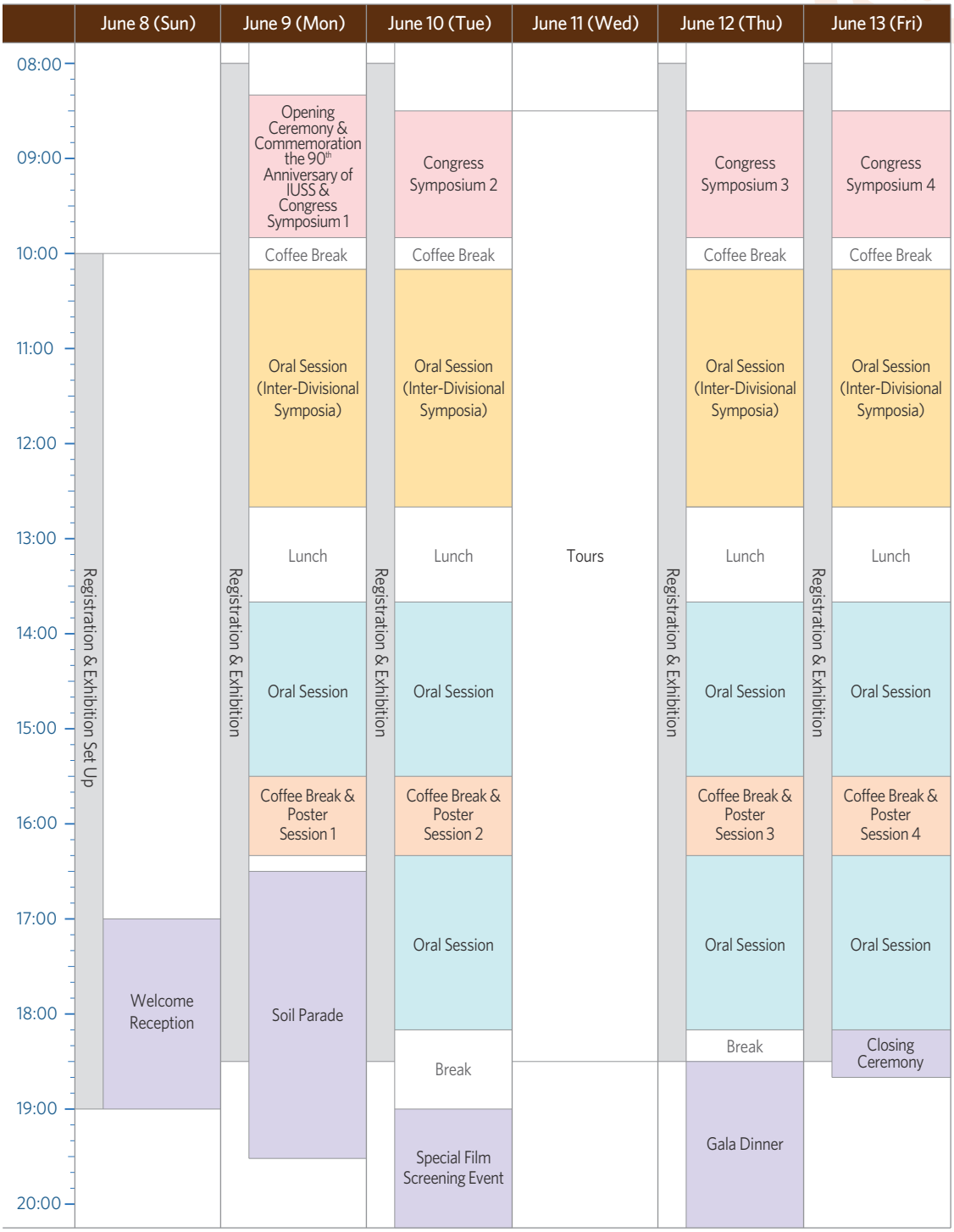
Host

International Union of Soil Sciences | Korean Society of Soil Science and Fertilizer | RDA Rural Development Administration

Support

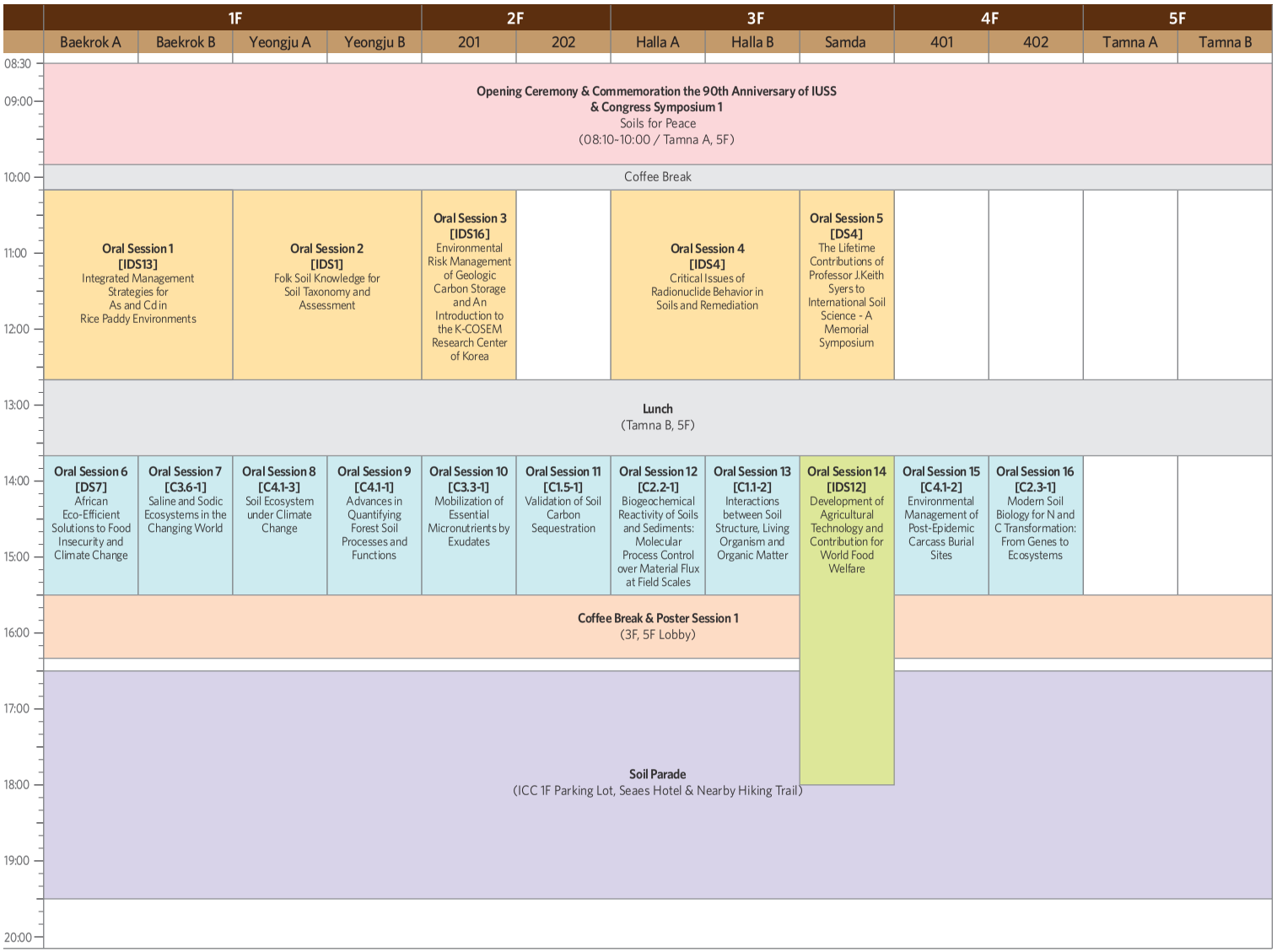
Ministry of Agriculture, Food and Rural Affairs | MINISTRY OF ENVIRONMENT | Jeju Special Self-Governing Province | KOREA TOURISM ORGANIZATION | KOFST

PROGRAM AT A GLANCE



PROGRAM AT A GLANCE

JUNE 9 (MON)



JUNE 10 (TUE)

	1F				2F		3F			4F		5F	
	Baekrok A	Baekrok B	Yeongju A	Yeongju B	201	202	Halla A	Halla B	Samda	401	402	Tamna A	Tamna B
08:30													
09:00	**Congress Symposium 2** Soil Security (Tamna A, 5F)												
10:00	Coffee Break												
11:00	**Oral Session 17** **[IDS9]** Key Processes and Factors to Mitigate Land Degradation		**Oral Session 18** **[IDS10]** Impact of Bioenergy Cropping on Soils and the Environment		**Oral Session 19** **[IDS17]** Surface Soil Resources Inventory and Integration: Soil Value and Erosion		**Oral Session 20** **[IDS2]** Global Soil Partnership		**Oral Session 21** **[IDS7]** The Soil Health: Human Health Nexus				
12:00													
13:00	**Lunch** (Tamna B, 5F)												
14:00	**Oral Session 22** **[WG6]** Urban Soils-Properties, Functions and Evolution	**Oral Session 23** **[DS3]** Modelling of Soil Properties and Processes – Challenges and Opportunities	**Oral Session 24** **[DS2] A** Soil Development and Soil Properties and Functions	**Oral Session 25** **[C2.5-3] A** Mechanism Controlling Greenhouse Gas Emissions from Soils	**Oral Session 26** **[C2.1-2]** Biophysical Aspects of Soil Function - Exploring Soil Hidden Frontiers	**Oral Session 27** **[C1.1-1]** The Role of Environment on Soil formation: Morphological Indicators	**Oral Session 28** **[C3.5-1]** Water Conservation Technologies and Impacts on Sustainable Dry Land Agriculture	**Oral Session 29** **[C2.4-1]** Mineralogy and Reactivity of Soil Microsites	**Oral Session 30** **[C1.5-2]** Quantification and Application of Uncertainty in Pedometrics	**Oral Session 31** **[C4.5-1]** The Soil Underfoot: Infinite Possibilities for a Finite Resource	**Oral Session 32** **[C1.4-1]** Marginal Soils: The Classification of Technogenic, Subaqueous, and Extraterrestrial Soil-like Bodies		
15:00													
16:00	**Coffee Break & Poster Session 2** (3F, 5F Lobby)												
17:00	**Oral Session33** **[DS6]** Soils in the Anthropocene Era: Global Health, Food Security, and Human Health	**Oral Session 34** **[C3.5-2]** Techniques to Manage Contaminated Arable Soils	**Oral Session 35** **[DS2] B** Soil Development and Soil Properties and Functions	**Oral Session 36** **[C2.5-3] B** Mechanism Controlling Greenhouse Gas Emissions from Soils	**Oral Session 37** **[C1.3-1]** Weathering and Soil formation in Response to Environmental Changes	**Oral Session 38** **[C3.5-4]** Physical Restoration of Soils	**Oral Session 39** **[WG4]** New Approaches in Paddy Soil Management for Food Safety and Environmental Quality	**Oral Session 40** **[C1.6]** Paleopedology	**Oral Session 41** **[C4.2-1]** Linking forest Management and Soil Processes to Ecosystem Productivity and Functions	**Oral Session 42** **[C1.3-2]** Volcanic Soils: Distinctive Properties and Management			
18:00													
19:00													
20:00	**Special Film Screening Event** (19:00-21:00 / Tamna A, 5F)												

PROGRAM AT A GLANCE

JUNE 11 (WED)

	1F				2F		3F			4F		5F	
	Baekrok A	Baekrok B	Yeongju A	Yeongju B	201	202	Halla A	Halla B	Samda	401	402	Tamna A	Tamna B
08:30													
09:00													
10:00													
11:00													
12:00													
13:00													
14:00	**Tours** (Technical Tours)												
15:00													
16:00													
17:00													
18:00													
19:00													
20:00													

JUNE 12 (THU)

	1F				2F		3F			4F		5F	
	Baekrok A	Baekrok B	Yeongju A	Yeongju B	201	202	Halla A	Halla B	Samda	401	402	Tamna A	Tamna B
08:30													
09:00	**Congress Symposium 3** Soil-Plant Welfares for Human (Tamna A, 5F)												
10:00	Coffee Break												
11:00	**Oral Session 43** **[IDS5] A** Biochar Soil Amendment for Environmental and Agronomic Benefits I		**Oral Session 44** **[IDS11]** Nanotechnologies in Environmental Soil Science				**Oral Session 45** **[IDS8]** Soils, Land Use and Heat		**Oral Session 46** **[IDS3]** Soil Information and Food Security	**Oral Session 56** **[WG7]** Agricultural Land Management for Improving Soil Fertility and Irrigation Efficiency of AFACI Pan-Asia Project			
12:00													
13:00	**Lunch** (Tamna B, 5F)												
14:00	**Oral Session 47** **[WG9]** Steps made toward a Universal Soil Classification	**Oral Session 48** **[C2.3-2] A** Life in Soils – Distribution and Function of Soil Microorganisms in a Changing Environment	**Oral Session 49** **[C2.2-2] A** Soil Organic Carbon: Dynamics, Stabilization, and Environmental Implications	**Oral Session 50** **[C3.3-2]** Advances in Rhizosphere Regulation and Soil Nutrient Management	**Oral Session 51** **[C3.6-2]** Salinity Management when Irrigating with Marginal Quality Waters	**Oral Session 52** **[C2.1-1]** Quantifying Evaporative Fluxes from Terrestrial Surfaces	**Oral Session 53** **[C4.4-1]** Education and Social Awareness for Soil Science in General Public	**Oral Session 54** **[WG3]** Understanding Acid Sulfate Soils: The Key to Their Proper Management	**Oral Session 55** **[WG10]** Cryosols on a Changing Planet: Properties, Processes, Regimes and Functions		**Oral Session 57** **[C1.2-2]** Soil Data, Spatial Information Systems and Interpretation Procedures		
15:00													
16:00	**Coffee Break & Poster Session 3** (3F, 5F Lobby)												
17:00	**Oral Session 58** **[WG2]** WRB - Lessons Learned from the Development of the Third Edition 2014	**Oral Session 59** **[C2.3-2] B** Life in Soils – Distribution and Function of Soil Microorganisms in a Changing Environment	**Oral Session 60** **[C2.2-2] B** Soil Organic Carbon: Dynamics, Stabilization, and Environmental Implications	**Oral Session 61** **[C3.5-3]** Management and Reclamation of Mining Site Soils	**Oral Session 62** **[C4.4-2]** Widening the Soil Science Course to the Various Directions of Scientific and Humanistic Area	**Oral Session 63** **[C1.2-1]** Pedodiversity and Ecological Services –Bridging Soil Geography and Land Use	**Oral Session 64** **[C2.4-3]** Minerals as Regulators of Carbon Flow through Soils	**Oral Session 65** **[WG1]** Soil Monitoring for Mankind and Environment Safety	**Oral Session 66** **[WG12]** Unique Contributions of Hydropedology to Integrated Soil and Water Sciences				
18:00													
19:00	**Gala Dinner** (18:30~ / Tamna B, 5F)												
20:00													

PROGRAM AT A GLANCE

JUNE 13 (FRI)

	1F				2F		3F			4F		5F	
	Baekrok A	Baekrok B	Yeongju A	Yeongju B	201	202	Halla A	Halla B	Samda	401	402	Tamna A	Tamna B
08:30													
09:00	**Congress Symposium 4** IUSS for Global Soils: Future Nexus (Tamna A, 5F)												
10:00	Coffee Break												
11:00	**Oral Session 67** **[IDS5] B** Biochar Soil Amendment for Environmental and Agronomic Benefits		**Oral Session 68** **[IDS6]** Soil Microbial Ecology under Stress and Global Climate Change				**Oral Session 69** **[IDS14]** From Science to Policy – is the Knowledge on Diffuse Pollution by POPs Sufficient to Support Policies		**Oral Session 70** **[IDS15]** Advanced Technology on Soil Remediation in Mined Lands				
12:00													
13:00	**Lunch** (Tamna B, 5F)												
14:00	**Oral Session 71** **[C2.5-1]** Advances in Techniques to Investigate Chemical, Physical and Biological Interfaces in Soils	**Oral Session 72** **[C2.1-3]** Hydro-Ecological Observatories and Advances in Soil Measurements and Sensors	**Oral Session 73** **[C3.2-1] A** Soil Erosion and Degradation on Agriculture Land	**Oral Session 74** **[C3.3-4] A** Soil Management Strategy for Enhancing Crop Yields	**Oral Session 75** **[C4.5-2]** Cultural Perspectives on Soils and Soil Science	**Oral Session 76** **[C2.4-2]** Roles of Minerals as Suppliers and Regulators of Plant Nutrients	**Oral Session 77** **[C2.2-3] A** Behavior and Fate of Pollutants Entering the Soil Environment	**Oral Session 78** **[WG5]** Mitigating Greenhouse Gas Emissions from Rice Paddy Soils	**Oral Session 79** **[C2.3-3]** Microbial Biodiversity and Ecosystem Functions in Volcanic Soils	**Oral Session 80** **[C3.3-3]** Ecological Significance of Soil Organic Phosphorus	**Oral Session 81** **[DS1]** Micromorphological Answers to Palaeopedological and Polypedogenetic Questions		
15:00													
16:00	**Coffee Break & Poster Session 4** (3F, 5F Lobby)												
17:00	**Oral Session 82** **[WG13]** Progress in Digital Soil Mapping and GlobalSoilMap	**Oral Session 83** **[WG11]** Soil Information Exchange Standards and Systems	**Oral Session 84** **[C3.2-1] B** Soil Erosion and Degradation on Agriculture Land	**Oral Session 85** **[C3.3-4] B** Soil Management Strategy for Enhancing Crop Yields	**Oral Session 86** **[C3.4-1]** Design and Performance of Cover Systems for Landfills and Contaminated Sites	**Oral Session 87** **[WG8]** Proximal Soil Sensing	**Oral Session 88** **[C2.2-3] B** Behavior and Fate of Pollutants Entering the Soil Environment	**Oral Session 89** **[C2.5-2]** How do Interactions with Organo-Mineral Surfaces Alter the Dynamics and Properties of Microbes and Macromolecules in Soil?	**Oral Session 90** **[C1.4-2]** The Progress in Development and Harmonization of Soil Classifications	**Oral Session 91** **[DS5]** Soil Health: Key to Food Security			
18:00													
	Closing Ceremony (Halla, 3F)												
19:00													
20:00													

20th WORLD CONGRESS OF SOIL SCIENCE

In Commemoration of the
90th Anniversary of the IUSS

ORAL SESSION

- Congress Symposium
- June 9 (Mon)
- June 10 (Tue)
- June 12 (Thu)
- June 13 (Fri)

- For your reference, abstracts of oral sessions are shown as group per symposium, but those of poster presentations are listed individually.
- Those who wish to cite abstracts in the proceedings of 20WCSS may refer as below since the abstract online access system does not specify the page.

* Author's Name. 2014. Title of Abstract. Symposium Name. Proceedings of the 20th WCSS (www.20wcss.org), Abstract Online Access System, June 8 to 13, Jeju, Korea.
(Example) Kim, S.Y. and V.K. Choi. 2014. Soil security and awareness. Congress Symposium 1: Soils for Peace. Proceedings of the 20th WCSS (www.20wcss.org), Abstract Online Access System, June 8 to 13, Jeju, Korea.

Congress Symposium 1

Tamna A (5F)

Congress Symposium 1: "Soil for Peace"

June 9 (Mon), 08:00 - 10:00

Moderator: Jeong-Gyu Kim (LOC Secretary General/ Korea University, Korea)

CG1-1 09:05 **The Soil-Peace Nexus**
Rattan Lal
Carbon Management and Sequestration Center, The Ohio State University, USA

CG1-2 09:25 **Soils for Peace and Security**
Magdi Selim
Louisiana State University, USA

CG1-3 09:45 **Starting Unification in Korean Peninsula from Soil**
Ho-Seung Yang
World Vision Korea, Korea

Congress Symposium 2

Tamna A (5F)

Congress Symposium 2: "Soil Security"

June 10 (Tue), 08:30 ~ 09:50

Moderator: Jae E. Yang (President, IUSS/ Kanwon National University, Korea)

CG2-1 08:35 **Soil Security Symposium: Introduction**
Alex Mcbratney (IUSS Dokuchaev Award Winner)
Department of Environmental Sciences, Faculty of Agriculture and Environment, The University of Sydney, Australia

CG2-2 08:45 **Reaching out from the Soil Box in Pursuit of Soil Security**
Johan Bouma
Soil Science, Wageningen University, The Netherlands

CG2-3 09:00 **Investing in Green Growth Involves Investing in Soil Security**
Anna van Paddenburg
Country Representative, Global Green Growth Institute, Indonesia

CG2-4 09:15 **Soil Security and International Climate Policy**
Robert Hill
University of Adelaide, Australia

09:30 Discussion

Congress Symposium 3

Tamna A (5F)

Congress Symposium 3: "Soil-Plant Welfares for Human"

June 12 (Thu), 08:30 ~ 09:50

Moderator: Pil Joo Kim (Program Committee Chair/ Gyeongsang National University, Korea)

CG3-1 08:35 **Soil's Capacity to Meet the National Nutrition Values in Korea**
Jae E. Yang[1] Kyung Jae Lim[1] and Sung Chul Kim[2]
[1] Kangwon National University, Korea; [2] Chungnam National University, Korea

CG3-2 08:55 **Soil Science in the Anthropocene: Golden Opportunities and Grand Challenges**
Donald L. Sparks
S. Hallock du Pont Endowed Chair in Soil and Environmental Chemistry, Director, Delaware Environmental Institute University of Delaware, USA

CG3-3 09:15 **Soil Biodiversity and Sustainability**
Diana H. Wall[1], Richard D. Bardgett[2], Wim H. van der Putten[3], Kelly S. Ramirez[1], Johan Six[4]
[1] Colorado State University, USA; [2] University of Manchester, UK; [3] Netherlands Institute of Ecology and Centre for Soil Ecology, The Netherlands; [4] Institute of Agricultural Sciences, ETH, Switzerland

09:35 Discussion

Congress Symposium 4

Tamna A (5F)

Congress Symposium 4: "IUSS for Global Soils: Future Nexus"

June 13 (Fri), 08:30 ~ 09:50

Moderator: Rainer Horn (IUSS President-Elect/ Christian Albrechts University, Germany)

CG4-1 08:35 **The IUSS (1924-2014) as a Link to Global Soil Science and Scientists**
Alfred Hartemink (IUSS Secretary General)
Department of Soil Science, FD Hole Soils Lab, University of Wisconsin - Madison, USA

CG4-2 09:00 **Strengthening the Role of Soil and Land in the Sustainable Development Goals: A Proposal to Increase Collaboration between IUSS and the Global Soil Week**
Alexander Muller
IASS, Germany

09:20 **Panel Discussion:**
Luca Montanarella (EU JRC, Italy)
David Lindbo (North Carolina State University, USA)
Irbs Kheoruenromne (Kasetsart University, Thailand)
Julio Alegre Orihuela (President of SLCS, Peru)
Victor Chude (Soil Science Society of Nigeria, Nigeria)
Ronald Vargas (FAO, Italy)

Oral Session No. 1

Baekrok A+B (1F)

[IDS13] Integrated Management Strategies for As and Cd in Rice Paddy Environments

June 9 (Mon), 10:10 - 12:40

Convenor: Rufus L Chaney (United States Department of Agriculture, USA)/ Won Il Kim (National Academy of Agricultural Science, Korea)

O1-1 10:10 **Integrated Management Strategies for Arsenic in Paddy Rice Fields**
Ming H. Wong
Hong Kong Institute of Education, Hong Kong

O1-2 10:40 **Risks of Metals and Metalloids in Subsistence Farming Systems Peripheral to Metal Mines and Agronomic Interventions**
Longbin Huang*
The University of Queensland, Australia

O1-3 11:00 **Effects of Soil Amendment on Cadmium and Arsenic Concentration and Arsenic Speciation in Rice Grain**
Tomohito Arao[1]*, Akira Kawasaki[1], Koji Baba[1], Shingo Matsumoto[2] and Tomoyuki Makino[1]
[1] National Institute for Agro-Environmental Sciences, Japan;[2] Shimane University, Japan

O1-4 11:20 **Cadmium Phytoremediation in a Contaminated Paddy Soil: A Field Study in Mae Sot District, Thailand**
Saengdao Khaokaew[1], Woranan Nakbanpote[2], Suchat Leungprasert[1] and Gautier Landrot[1]*
[1] Kasetsart University, Thailand; [2] Mahasarakham University, Thailand

O1-5 11:40 **Heavy Metal(loid) Levels in Paddy Soils and Brown Rice in Korea**
Woo-Ri Go[1], Won-Il Kim[1]*, Anitha Kunhikrishnan[1], Ji-Hyock Yoo[1], Eun-Jin Huh[1], Seon-Hee Jeong[1] and Kye-Hoon Kim[2]
[1] National Academy of Agricultural Science, Korea; [2] The University of Seoul, Korea

O1-6 12:00 **Cadmium Contamination and its Risk Management**
Nanthi Bolan[1]*, Tomoyuki Makino[2], Anitha Kunhikrishnan[3], Pil-Joo Kim[4], Satoru Ishikawa[2], Masaharu Murakami[2], Ravi Naidu[5] and Mary Beth Kirkham[6]
[1] University of South Australia, Australia; [2]National Institute for Agro-Environmental Sciences, Japan; [3]National Academy of Agricultural Science, Korea; [4] Gyeongsang National University, Korea;[5]University of Western Australia, Australia;[6] Kansas State University, USA

O1-7 12:20 **Response of Dissolved Arsenic and Cadmium Concentrations in Paddy Soils to Changes in the Air-Filled Porosity: Field Monitoring by TDR and Suction Lysimetry**
Ken Nakamura[1]*, Hidetaka Katou[1] and Toshimitsu Honma[2]
[1]National Institute for Agro-Environmental Sciences, Japan; [2]Niigata Agricultural Research Institute, Japan

Oral Session No. 2

Yeongju A+B (1F)

[IDS1] Folk Soil Knowledge for Soil Taxonomy and Assessment

June 9 (Mon), 10:10 - 12:40

Convenor: Francisco Bautista-Zuñiga (Universidad Nacional Autonoma de Mexico, Mexico)/ Yeon Kyu Sonn (National Academy of Agricultural Science, Korea)

O2-1 10:10 **Soil Perception by Humans: From Ethnopedology to Neuropedology**
Pavel Krasilnikov*
Moscow State University and Institute of Biology, Karelian Research Center of RAS, Russia

O2-2 11:00 **Indigenous Soil Knowledge and Soil Mapping by Zulu Farmers, Potshini, South Africa**
Nkosinomusa Buthelezi[1]*, Jeffrey Hughes[2], Pardon Muchaonyerwa[2], Albert Modi[2] and Karen Caister[2]
[1]University of Limpopo, South Africa; [2]University of KwaZulu-Natal, South Africa

O2-3 11:20 **Use and Management of the Soils; Local Perspective of the Land Decision-Making**
Alma Barajas, Francisco Bautista-Zuniga*, Luis Miguel Morales Manilla and Maria Angeles Gallegos Tavera
Univesidad Nacional Autonoma de Mexico., Mexico

O2-4 11:40 **Ethnopedological Knowledge by Smallholder Farmers for Agriculture Practice - A Case Study in Nanga Machan, Kanowit, Sarawak, Malaysia**
Mohd Effendi Wasli*, Alissee Sherrilyn Bagol, Ho Soo Ying and Mugunthan Perumal
Universiti Malaysia Sarawak, Malaysia

O2-5 12:00 **State and Regional Soil Maps using Maya Soil Classification**
Francisco Bautista
Universidad Nacional Autonoma de Mexico, Mexico

O2-6 12:20 **Inventory of Local Knowledge about Buried Soils in the Volcanic Zone of Michoacan Mexico**
Alma Barajas[1], Francisco Bautista[1]* and Maria Alcala-De-Jesus[2]
[1]Universidad Nacional Autonoma de Mexico, Mexico;[2]Universidad Michoacana de San Nicolas de Hidalgo, Mexico

Oral Session No. 3

201 (2F)

[IDS16] Environmental Risk Management of Geologic Carbon Storage and an Introduction to the K-COSEM Research Center of Korea

June 9 (Mon), 10:10 - 12:30

Convenor: Seong-Taek Yun (Korea University, Korea)/ Ho-Young Jo (Korea University, Korea)

O3-1 10:00 **Inauguration of K-COSEM (Korea CO2 Storage Environmental Management) Research Center for Geologic Carbon Storage in Korea: Our Mission**
Seong-Taek Yun[1]*, Ho-Young Jo[1], Gayoung Yoo[2], Kang-Kun Lee[3], Eungyu Park[4] and Mun-Hyun Ko[5]
[1]Korea University, Korea; [2]Kyung Hee University, Korea; [3]Seoul National University, Korea; [4]Kyungpook National University, Korea; [5]Soongsil University, Korea

O3-2 10:20 **Effects of CO2 Disturbance on Soil Ecosystems**
Haegeun Chung
Konkuk University, Korea

O3-3 10:40 **Soil CO2 Efflux in Ecological Studies: Current Status and Challenges**
Tae Kyung Yoon[1]*, Yowhan Son[1], Hyeon Min Yun[1], Nam Jin Noh[2], Gayoung Yoo[3], Haegeun Chung[4], and Seong-Taek Yun[1]
[1]Korea University, Korea; [2]Gifu University, Japan; [3]Kyung Hee University, Korea; [4]Konkuk University, Korea

11:00 Break

O3-4 11:30 **Soil Gas Movement and VOC Concentration Change in Unsaturated Zone with Fluctuating Groundwater Table: Implication for CO2 Monitoring**
Kang-Kun Lee,*, Won-tak Jeon, Seung Hyun Lee and Seong-soon Lee
Seoul National University, Korea

O3-5 11:50 **Origin and Hydrochemistry of CO2-Rich Springs in Korea: Implications for Long-Term Environmental Effects and Monitoring of CO2 Leakage**
Hyun-Kwon Do, Kyoung-Ho Kim and Seong-Taek Yun*
Korea University, Korea

O3-6 12:10 **Impact of Near-Surface Heterogeneities on CO2 Leakage and the Implication to the Risk Assessment**
Eungyu Park[1]* and Weon Shik Han[2]
[1]Kyungpook National University, Korea; [2]University of Wisconsin, USA

Oral Session No. 4

Halla A+B (3F)

[IDS4] Critical Issues of Radionuclide Behavior in Soils and Remediation

June 9 (Mon), 10:10 - 12:40

Convenor: Martin. H. Gerzabek (University of Natural Resources and Life Sciences Vienna, Austria)/ Kazuyuki Inubushi (Chiba University, Japan)

O4-1 10:10 **The State of the Art on Remediation after Nuclear Accidents prior to the Fukushima Daiichi Accident**
Brenda Howard
Lancaster Environment Centre, United Kingdom

O4-2 10:35 **Distribution of Radionuclides in the Soil Environment and their Transfer to Vegetation following the Fukushima Nuclear Accident**
Yasuyuki Muramatsu[1]*, Takeshi Ohno[1], Kazumasa Oda[1], Midori Sugiyama[1], Tomoyuki Kobayash[2], Mamoru Satou[2], Mutsuto Satou[2], Shigeto Fujimura[2] and Hiroyuki Matsuzaki[3]
[1]Gakushuin University, Japan; [2]Fukushima Agricultural Technology Centre, Japan; [3]The University of Tokyo, Japan

O4-3 11:00 **Subsurface Reactive Transport of U(vi)**
Jaeyoung Choi*, Hongkyun Lee and Young-Tae Park
KIST, Korea

O4-4 11:20 **Relationship between Radiocesium Interception Potential of Paddy Soil Clays in Fukushima and their Clay Mineralogy**
Atsushi Nakao[1]*, Sho Ogasawara[1], Oki Sano[2], Toyoaki Ito[3] and Junta Yanai[1]
[1]Kyoto Prefectural University, Japan; [2]Okayama Prefectural Technology Center for Agriculture, Forestry and Fisheries, Japan; [3]Tohoku University, Japan

O4-5 11:40 **Distribution of Radioactive Cesium in Soil and Its Uptake by Herbaceous Plants in Temperate Pastures with Different Management after Fukushima Dai-Ichi Nuclear Power Plant Accident**
Shin-Ichiro Ogura[1], Takae Suzuki[2] and Masanori Saito[2]
[1]Graduate School of Agricultural Science, Tohoku University, Japan; [2]Field Science Center, Tohoku University, Japan

O4-6 12:00 **Layer-To-Layer Variations of 137cs Content in Soil throughout a Calendar Year within the Alienation Zone of the Chernobyl Npp**
Nataliia Zarubina
Institute for Nuclear Research of National Academy of Science of Ukraine, Ukraine

O4-7 12:20 **Estimation of Radiocesium In/out Flows in Paddy Fields in Fukushima, Japan**
Seiko Yoshikawa[1]*, Eguchi Sadao[1], Itahashi Sunao[1], Igura Masato[1], Nobuharu Kihou[1], Shigeto Fujimura[2], Takashi Saito[3], Hideshi Fujihara[1], Shinichiro Mishima[1], Kazunori Kohyama[1], Noriko Yamaguchi[1] and Ohkoshi Satoru[3]
[1]National Institute for Agro-environmental Sciences, Japan
[2]National Agriculture and Food Research Organization, Japan; [3]Fukushima Agricultural Technology Centre, Japan

Oral Session No. 5

Samda (3F)

[DS4] The Lifetime Contributions of Professor J. Keith Syers to International Soil Science - A Memorial Symposium

June 9 (Mon), 10:10 - 12:40

Convenor: John Ryan (Carrigataha, Cahir Ireland)/ Tony O'Donnell (University of Western Australia, Australia)

O5-1 10:15 **Keith Syers: a Champion for Soils and Agricultural Research across the World**
Tony O'donnell, The University of Western Australia, Australia

O5-2 10:35 **Nutrient Balances, Food Security and Fertilizer Raw Materials**
David Manning, Newcastle University, United Kingdom

O5-3 10:50 **Contributions of Keith Syers to Knowledge of the Sulphur Cycle**
Denis Curtin[1]*, Mike Hedley[2], Russ Tillman[2], Nanthi Bolan[3] and Tony O'donnell[4]
[1]Plant & Food Research, New Zealand; [2]Massey University, New Zealand; [3]University of South Australia, Australia
[4]University of Western Australia, Australia

O5-4 11:05 **J.K. Syers a Protagonist for the Direct Application of Reactive Phosphate Rocks to Pasture Soils**
Michael Hedley[1], Nanthi Bolan[2]*, Alec Mackay[3], Paul Gregg[1] and Angela Olegario[4]
[1]Massey University, New Zealand; [2]University of South Australia, Australia; [3]AgResearch, New Zealand; [4]International Fertiliser Association, France

O5-5 11:20 **Pedogenesis, Nutrient Dynamics, and Ecosystem Development: the Legacy of Keith Syers and T.W. Walker**
Benjamin Turner[1] and Leo Condron[2]
[1]Smithsonian Tropical Research Institute, Panama; [2]Lincoln University, New Zealand

O5-6 11:35 **Keith Syers and P Use Efficiency in Agriculture**
A E (johnny) Johnston[1]* and John Ryan[2]
[1] Rothamsted Research, United Kingdom; [2] Private, Ireland

O5-7 11:50 **J.K. Syers on the Environmental Impact of Agriculture on Water Quality**
Andrew Sharpley[1]*, Mike Hedley[2] and Lance Currie[2]
[1]University of Arkansas, USA; [2]Massey University, New Zealand

O5-8 12:05 **J.K. Syers on the Issue of Cadmium in Agricultural Systems**
Mike Mclaughlin[1]* and Cynthia Grant[2]*
[1]University of Adelaide, Australia; [2]Agriculture and Agri-Food Canada Brandon Research Centre, Canada

O5-9 12:20 **Phosphorus-Metal(Loid) Interactions in Relation to Soil Remediation**
Nanthi Bolan[1], Ravi Naidu[1], Andrew Sharpely[2], Jin Hee Park[3] and Ramya Thangarajan[1]
[1]University of South Australia, Australia; [2]University of Arkansas, Australia; [3]University of Queensland, Australia

12:40 - 13:40 Lunch (Tamna B)

Oral Session No. 6

Baekrok A (1F)

[DS7] African Eco-Efficient Solutions to Food Insecurity and Climate Change

June 9 (Mon), 13:40 - 15:30

Convenor: Rolf Sommer (International Center for Tropical Agriculture (CIAT), Kenya)

O6-1 13:40 **Eco-Efficiency of Integrated Soil Fertility Management in Western Kenya**
Rolf Sommer, John Mukalama, Job Kihara, Saidou Koala, Isaac Savini, Leigh Winowiecki and Deborah Bossio
International Center for Tropical Agriculture (CIAT), Kenya

O6-2 14:00 **Approaches to Buffer Crop Productivity under Variable Soil Fertility and Climatic Conditions in Sub-Saharan Africa**
Shamie Zingore[1], Regis Chikowo[2], Martin Moyo[3] and Justice Nyamangara[3]
[1]International Plant Nutrition Institute, Kenya; [2]Michigan State University, Malawi; [3]ICRISAT, Zimbabwe

O6-3 14:15 **Predicting Crop Yield and Response to Nutrients from Soil Spectra: Example from Sub-Sahara Africa**
Job Kihara[1]*, Leigh Winowiecki[1], Lulseged Desta[2] and Rolf Sommer[1]
[1]International Center for Tropical Agriculture (CIAT), Kenya; [2]CIAT, Malawi

O6-4 14:30 **Using an Ecosystems Approach for Securing Water and Land Resources in the upper Tana Basin**
Justine Cordingley[1]*, Fred Kizito[1], Kennedy Ng'ang'a[1] and Fred Kihara[2]
[1]International Center for Tropical Agriculture (CIAT), Kenya; [2]The Nature Conservancy (TNC) Kenya Program Office, Kenya

O6-5 14:45 **Beyond vs Within the Farm Gate: Nutrient and Organic Matter Solutions to Resource-Constrained Agriculture in Africa**
Johannes Lehmann[1], Andrew Simons[1], Garrick Blalock[1], Worku Chibssa[2], Dawit Solomon[1], Marie Zwetsloot[1], Rachel Hestrin[1], David Bluhm[1] and Berhanu Belay[3]
[1]Cornell University, USA; [2]CARE Ethiopia, Ethiopia; [3]Jimma University, Ethiopia

O6-6 15:00 **Soils, Ecosystem Services and Poverty Alleviation: a Case Study from Sub-Saharan Africa**
Helaina Black[1]*, Anteneh Fekadu[2], Bedru Balana[1], Jo Smith[3], Mike Rivington[1], Simon Langan[4], Tewodros Tefera[5], Charlie Langan[6] and Grant Davidson[1]
[1] The James Hutton Institute, United Kingdom; [2]Southern Agricultural Research Institute, Ethiopia; [3]University of Aberdeen, United Kingdom; [4]International Water Management Institute, Ethiopia; [5]University of Hawassa, Ethiopia; [6]Carbon Foundation for East Africa, Uganda

O6-7 15:15 **Delivery of Hydrologic and Microbial Services by Indigenous Shrub Rhizospheres to Agroecosystems under a Changing Climate in the Sahel**
R.P. Dick, E. L. Dossa, I. Diedhiou, M. Khouma, M. Sene, A. Lufafa, F. Kizito, S.A.N. Samba, A.N. Badiane, S. Diedhiou
Ohio State University, USA

Oral Session No. 7

Baekrok B (1F)

[C3.6-1] Saline and Sodic Ecosystems in the Changing World

June 9 (Mon), 13:40 - 15:30

Convenor: Tibor Tóth (Centre for Agricultural Research of the Hungarian Academy of Sciences, Hungary)/ John Triantafilis (The University of New South Wales, Australia)

O7-1 13:40 **Soil Salinity Assessment at Landscape Level using Difuse Reflectance Spectroscopy and Geostatistics**
Monika Zovko[1]*, Claudio Colombo[2], Annamaria Castrignano[3], Anna Maria Stellacci[3], Davor Romic[1], Marija Romic[1], Erica Di Iorio[2] and Giuseppe Palumbo[2]
[1] University of Zagreb Faculty of Agriculture, Croatia; [2]University of Molise, Italy; [3]Research Unit for Cropping System in Dry Environments, Italy

O7-2 14:10 **Spatiotemporal Variability of Soil Salinity and Its Effects on Rice Production in the North Central Coastal Region of Vietnam**
Lam Ho Nguyen[1]*, Tetsuhiro Watanabe[2] and Shinya Funakawa[2]
[1]Kyoto University, Viet Nam; [2]Kyoto University, Japan

O7-3 14:30 **Resource Conservation Strategies for Rice-Wheat Cropping Systems in Partially Reclaimed Salt Affected Soils and their Effects on Carbon Sequestration and Nitrogen Availability**
Ajay Bhardwaj, Vinay Kumar Mishra, Yashpal Singh, Suresh Kumar Chaudhari and Dinesh Kumar Sharma
Central Soil Salinity Research Institute, India

O7-4 14:50 **Potential Short-term Effect of Cultivation and Crop Rotation Systems on Soil Quality in a Coastal Newly Reclaimed Farmland, Eastern China**
Rongjiang Yao, Jingsong Yang*, Shipeng Yu and Xiangping Wang
Chinese Academy of Sciences, China

O7-5 15:10 **Hydrostratigraphic Analysis Using Electromagnetic Induction Data and a Spatially-Constrained Algorithm for Quasi-Three-Dimensional Electrical Conductivity Imagi**
John Triantafilis
BEES, UNSW, Australia

Oral Session No. 8

Yeongju A (1F)

[C4.1-3] Soil Ecosystem under Climate Change

June 9 (Mon), 13:40 - 15:30

Convenor: Kijong Cho (Korea University, Korea)/ Seunghun Hyun (Korea University, Korea)

O8-1 13:40 **Climate Change Effects on the Suitability of an Agricultural Area to Maize Cultivation: a New Land Evaluation Hybrid System for Maize**
Antonello Bonfante*, Angelo Basile, Silvia Maria Alfieri, Eugenia Monaco and Francesca De Lorenzi
Italian National Research Council - CNR, Italy

O8-2 14:10 **Soil Organic Carbon Fractions, Aggregate Stability, Nutrient Availability and their Interrelationships in Tropical Cropping Systems**
T. Rosanthan[1], Renuka Ratnayake[2]* and N. Gnanavelrajah[1]
[1]University of Jafna, Sri Lanka; [2]Institute of Fundamental Studies, Sri Lanka

O8-3 14:30 **The Risk Assessment of Drought for Regional Upland Soil according to Rcp8.5 Scenario using Soil Moisture Evaluation Model (afke 0.5)**
Myung Chul Seo, Hyeon-Suk Cho, Ki-Yeong Seong, Min-Tae Kim, Tae-Seon Park, Hang-Won Kang and Kook Sik Shin
National Institute of Crop Science, Korea

O8-4 14:50 **Nitrogen Dynamics and Greenhouse Gas Emissions in Cropping Systems under Elevated Co2: Face Experiments and a Meta-analysis**
Shu Kee Lam[1], Deli Chen[1]*, Rob Norton[2], Roger Armstrong[3], Erda Lin[4] and Arvin Mosier[1]
[1]The University of Melbourne, Australia; [2]International Plant Nutrition Institute, Australia; [3]Victorian Department of Environment and Primary Industries, Australia; [4]Chinese Academy of Agricultural Sciences, China

O8-5 15:10 **Distribution of Photo-assimilated Carbon as Affected by Nutrient Addition to Soil**
Saikat Chowdhury[1]*, Mark Farrell[2] and Nanthi Bolan[1]
[1]Centre for Environmental Risk Assessment and Remediation (CERAR), University of South Australia, Australia; [2]CSIRO Land and Water / Sustainable Agriculture Flagship, Australia

Oral Session No. 9

Yeongju B (1F)

[C4.1-1] Advances in Quantifying Forest Soil Processes and Functions

June 9 (Mon), 13:40 - 15:30

Convenor: Zhihong Xu (Griffith University, Australia)

O9-1 13:40 **Quantifying Contribution of Ammonia-oxidizing Archaea to Nitrification in Acid Soils**
Jizheng He[1] and Zhihong Xu[2]
[1]Chinese Academy of Sciences, China; [2]Griffith University, Australia

O9-2 14:10 **Innovative Approaches and Technologies to Assess N2O Emissions from Forest Ecosystems, with Examples from South China**
Jan Mulder[1]*, Jing Zhu[1], Peter Dorsch[1], Xiaoshan Zhang[2], Yanhui Wang[3] and Lei Duan[4]
[1]Norwegian University of Life Sciences, Norway; [2]Research Center for Eco-Environmental Sciences (RCEES-CAS), China; [3]Chinese Academy of Forestry, China; [4]Tsinghua University, China

O9-3 14:30 **The North American Long-term Soil Productivity Experiment: Findings from a Long-term, Large-Scale Study**
Robert Powers[1], Mary Beth Adams[2]*, Robert Fleming[3], Andrew Scott[2], Deborah Page-Dumroese[2], David Morris[4] and Shannon Berch[5]
[1]USDA Forest Service, retired, USA; [2]USDA Forest Service, USA; [3]Canadian Forest Service, Canada; [4]Ontarioa Ministry of Natural Resources, Canada; [5]British Columbia Minsitry of Forests and Range, Canada

O9-4 14:50 **Continuous Measurement of Vertical Distribution of CO2 Concentration and Its Isotopic Signature in a Beech and a Pine Forest Soil**
Stephan Wirth* and Hubert Jochheim
Leibniz-Centre for Agricultural Landscape Research (ZALF), Germany

O9-5 15:10 **Stress Distribution under Forestry Machinery and Consequences on Physical Soil Functions**
Roland Riggert*, Heiner Fleige and Rainer Horn
Institute of Plant Nutrition and Soil Science, Germany

Oral Session No. 10

201 (2F)

[C3.3-1] Mobilization of Essential Micronutrients by Exudates

June 9 (Mon), 13:40 - 15:30

Convenor: Owen Duckworth (North Carolina State University, USA)/ Sara Holmstrom (University of Stockholm, Sweden)

O10-1 13:40 **Biogeochemistry of Fe Acquisition by Phytosiderophores in the Rhizosphere**
Walter Schenkeveld[1]*, Eva Oburger[2], Yvonne Schindlegger[2], Stephan Hann[2], Markus Puschenreiter[2] and Stephan Kraemer[1]
[1]University of Vienna, Austria; [2]University of Natural Resources and Life Sciences, Austria

O10-2 14:10 **Siderophore Production by Soil Microorganisms**
Engy Ahmed* and Sara Holmström
Stockholm University, Sweden

O10-3 14:30 **The Role of Root Exudates Released by Monocots and Dicots in Mobilizing Fe from Soil Minerals**
Rebeka Fijan[1], Roberto Terzano[2], Concetta Eliana Gattullo[2], Fabio Valentinuzzi[1], Youry Pii[1], Roberto Pinton[3], Nicola Tomasi[3], Luca Medici[4], Stefano Cesco[1] and Tanja Mimmo[1]*
[1]Free University of Bolzano, Italy; [2]University of Bari, Italy; [3]University of Udine, Italy; [4]CNR, Italy

O10-4 14:50 **The Mechanisms of High Al Tolerance in Rhodotorula Taiwanensis RS1**
Xue Qiang Zhao, Chao Wang and Ren Fang Shen*
Chinese Academy of Sciences, China

O10-5 15:10 **Effect of Nitrogen Fertilization on Zinc and Iron Uptake and Yield Components of Wheat**
Yadu Nath Timsina[1], Bal Ram Singh[1]* and Espen Govasmark[2]
[1] Norwegian University of Life Sciences, Norway; [2] Oslo Kommune, Norway

Oral Session No. 11

202 (2F)

[C1.5-1] Validation of Soil Carbon Sequestration

June 9 (Mon), 13:40 - 15:30

Convenor: Sabine Grunwald (University of Florida, USA)/ A-Xing Zhu (University of Wisconsin-Madison, USA)

O11-1 13:40 **Spatial Stratification in Design-based Sampling for Soil Carbon Auditing**
Jaap De Gruijter[1]*, Alex Mcbratney[2] and Budiman Minasny[2]
[1] Wageningen University, Netherlands; [2] The University of Sydney, Australia

O11-2 14:10 **Soil Carbon Sequestration in the Carbon Richest Region in the Conterminous USA**
Xiong Xiong[1]*, Sabine Grunwald[1], D. Brenton Myers[2], Willie G. Harris[1] and Nicolas B. Comerford[1]
[1] University of Florida, USA, [2] University of Missouri, USA

O11-3 14:30 **Quantification and Mapping of Vertical Soil Organic Carbon Distribution as a Function of Land Use and Soil Form, with a View to Carbon Accounting**
Liesl Wiese[1]*, Ignacio Ros[2], Andrei Rozanov[2], Adriaan Boshoff[2], Willem De Clercq[2] and Thomas Seifert[2]
[1] Agricultural Research Council - Institute for Soil, Climate and Water, South Africa; [2] Stellenbosch University, South Africa

O11-4 14:50 **Soil Organic Carbon Stocks under Pasture Atlantic Forest in Rio de Janeiro State, Brazil**
Joyce Monteiro[1]*, Mauricio Coelho[1], Ademir Fontana[1], Helga Hissa[2], Ana Carolina Goulart[3] and Marcelo Costa[2]
[1] Embrapa, Brazil; [2] Secretary of agriculture and livestock of the state of Rio de Janeiro (SEAPEC), Brazil; [3] Federal Rural University of Rio de Janeiro (UFRRJ), Brazil

O11-5 15:10 **Soil Carbon and Nutrient Status of Soils under Secondary Forest Transformations in Leyte Island, Philippines**
Pearl Aphrodite Carnice and Suzette Lina*
Eastern Visayas State University, Philippines

Oral Session No. 12

Halla A (3F)

[C2.2-1] Biogeochemical Reactivity of Soils and Sediments: Molecular Process Control over Material Flux at Field Scales

June 9 (Mon), 13:40 - 15:50

Convenor: Steven A.Banwart (The University of Sheffield, United Kingdom)/ Jon Chorover (University of Arizona, USA)

O12-1 13:40 **Colloid Formation and Transport along Hillslopes Modifies Erosion and Ridge - Valley Spacing in Post-orogenic Landscapes**
Oliver Chadwick[1]*, Carleton Bern[2] and Jon Chorover[3]
[1] University of California, USA; [2] US Geological Survey, USA; [3] University of Arizona, USA

O12-2 14:10 **Hierarchy of Two Drivers of Soil Organic Matter Biodegradation: Microbial Habitat Properties Versus Microbial Communities**
Sabrina Juarez[1]*, Naoise Nunan[2], Valerie Pouteau[3], Thomas Lerch[4] and Claire Chenu[5]
[1]Upmc, France; [2]Cnrs, France; [3]Inra, France; [4]Upec, France; [5]AgroParisTech, France

O12-3 14:30 **Shedding Light on Soil Organic Matter-mineral Associations: Their Role in Carbon Cycling and Sequestration in the Terrestrial Environment**
Donald Sparks and Chunmei Chen
University of Delaware, USA

O12-4 14:50 **Mercury and Sulfur Cycling in a Peatland Soil Warming and Carbon Dioxide Enhancement Study: Sulfur Speciation at Time-zero**
Brandy Toner[1], Olha Furman[1], Randall Kolka[2], Edward Nater[1] and Stephen Sebestyen[2]
[1]University of Minnesota, USA; [2]USDA Forest Service, USA

O12-5 15:10 **The Effect of Microbial Diversity on Soil Organic Carbon Mineralisation Highlighted by a 13C-Labelling Technique**
Julien Guigue[1]*, Olivier Mathieu[1], Pierre-Alain Maron[1], Lionel Ranjard[2], Aurore Kaisermann[1] and Jean Leveque[1]
[1]Universite de Bourgogne, France; [2]University of Manchester, United Kingdom

O12-6 15:30 **Fe/Al Oxides Can Act as Natural Anti-acidification Agents in Variable Charge Soils**
Jiuyu Li and Renkou Xu*
Chinese Academy of Sciences, China

Oral Session No. 13

Halla B (3F)

[C1.1-2] Interactions between Soil Structure, Living Organism and Organic Matter

June 9 (Mon), 13:40 - 15:30

Convenor: Farhad Khormali (Gorgan University of Agricultural Sciences and Natural Resources, Iran)/ Rosa M Poch (Universitat de Lleida, Spain)

O13-1 13:40 **Fertilisation with Pig Slurry Affects the Pore Size Distribution of Soils**
Angela-D. Bosch-Serra*, Merce Molner and Rosa Maria Poch
Universitat de Lleida, Spain

O13-2 14:10 **The Use of Pb Labelling and Sem to Investigate Organic Matter in Thai Soil Microaggregates**
Punyisa Trakoonyingcharoen[1]*, Robert J. Gilkes[2] and Kumut Sangkhasila[1]
[1]Kamphaeng Saen Kasetsart University, Thailand; [2]The University of Western Australia, Australia

O13-3 14:30 **Interactions between Soil Structure and Soil Organic Matter: Contribution of Pedofauna Activity**
Laura Gargiulo[1]*, Giacomo Mele[1], Gilda Buscemi[2], Ottavio Soppelsa[2] and Fabio Terribile[2]
[1]National Research Council (CNR), Italy; [2]University of Naples 'Federico II', Italy

O13-4 14:50 **Ectomycorrhizal Fungi in Association with Pinus Sylvestris Seedlings Promote Soil Aggregation and Soil Water Repellency**
Weishuang Zheng[1], Kathryn Morris[2] and Matthias Rillig[1]*
[1]Free University of Berlin, Germany; [2]Xavier University, USA

O13-5 15:10 **Soil Aggregate Formation and Stability Induced by Starch and Cellulose**
Katsutoshi Mizuta* and Shinjiro Sato
Soka University, Japan

Oral Session No. 14

Samda (3F)

[IDS12] Development of Agricultural Technology and Contribution for World Food Welfare

June 9 (Mon), 13:30 - 18:30

Moderator: Kangho Jung (National Academy of Agricultural Science, Korea)

13:30 **Introdution**

O14-1 14:00 **The Critical Role of Soils in Preserving and Enhancing a Sustainable World**
Donald Sparks
University of Delaware, USA

O14-2 14:20 **Earth Observation for Monitoring Agriculture: FAO's Global Information and Early Warning System (GIEWS)**
Oscar Rojas
Climate Impact,Adaptation & Environmental Sustainability Team, FAO-UN, Italy

O14-3 14:40 **The Role of Soil Scientists in Addressing Global Issues of the Anthropocene and Climate Strategic Agroecosystems**
Rattan Lal*
The Ohio State University, USA

O14-4 15:00 **Strategy of Land Utilization for Environmentally Sustainable Agriculture**
Winfried Blum
BOKU University Vienna, Austria

O14-5 15:40 **Development and Utilization of Indicators to Manage Soil and Environmental Resources**
Chia-Hsing Lee[1], Chun-Chi Tsui[1], Horng-Yuh Guo[2] and Zueng-Sang Chen[2]*
[1]National Taiwan University, Taiwan; [2]Taiwan Agricultural Research Institute, Council of Agriculture, Taiwan

O14-6 16:00 **Strategies to Prevent Soil from Pollution and Degradation**
Owen Duckworth
North Carolina State University, USA

O14-7 16:20 **Reinforcing Agro-material Industries to Maintain Soil Fertility and Crop Production**
Mizuhiko Nishida
NARO Tohoku Agricultural Research Center, Japan

O14-8 16:40 **Management of Soil and Nutrients Considering Soil Spatial Variation**
Jeff Novak
USDA-ARS-CPRC, USA

O14-9 17:00 **Utilization of Korean Soil Information System-heulg-to-ram for Research-extension-network in Agriculture**
Deogbae Lee* and Kangho Jung
National Academy of Agricultural Science (NAAS), RDA, Korea

17:30 **Discussion**

Oral Session No. 15

401 (4F)

[C4.1-2] Environmental Management of Post-Epidemic Carcass Burial Sites

June 9 (Mon), 13:40 - 15:30

Convenor: Geonha Kim (Hannam University, Korea)/ Kwon-Rae Kim (Gyeongnam National University, Korea)

O15-1 13:40 **Disinfection Effects of Calcium Oxide (cao) on Pathogenic Microorganisms in Leachate from Infected Livestock Carcass Burial Sites**
Seungho Yu*, Jiyoung Seo, Seok Mun Cha and Taehun Kim
Korea Atomic Energy Research Institute, Korea

O15-2 14:10 **Determining Leaching Possibility of Carcass Leachate in Groundwater**
So Hee Jung[1], Young Gyu Hong[1], Gun Ha Kim[2] and Sung Chul Kim[1]*
[1]Chungnam National University, Daejeon, Korea; [2]Hannam University, Korea

O15-3 14:30 **Invasive Plant-derived Biochar Inhibits Sulfamethazine Uptake by Lettuce in Soil**
Anushka Upamali Rajapaksha[1], Meththika Vithanage[2], Jung Eun Lim[1], Mohamed Bedair Ahmed[3], Ming Zhang[4], Sang Soo Lee[1] and Yong Sik Ok[1]*
[1]Kangwon National University, Korea; [2]Institute of Fundamental Studies, Sri Lanka; [3]National Research Center, Egypt; [4]China Jiliang University, China

O15-4 14:50 **Application of Woody Tree based Phytoremediation Technique to Remove N and P from Soil: Implication for Cleaning up the Livestock Burial Sites**
Byoung-Hwan Seo[1], Junsik Bae[1], Kye-Hoon Kim[2] and Kwon-Rae Kim[1]*
[1]Gyeongnam National University of Science and Technology, Korea; [2]University of Seoul, Korea

O15-5 15:10 **Characteristics of Some Technosols Developed on Oil Refinery Waste Materials**
Ahmad Heidari* and Pari Asadi
University of Tehran, Iran

Oral Session No. 16

402 (4F)

[C2.3-1] Modern Soil Biology for N and C Transformation: From Genes to Ecosystems

June 9 (Mon), 13:40 - 15:30

Convenor: Kiwamu Minamisawa (Tohoku University, Japan)

O16-1 13:40 **Denitrifying Microbial Community in Agricultural Soil: Key Players involved in N2O Generation and Elimination**
Keishi Senoo*, The University of Tokyo, Japan

O16-2 14:10 **Biological N2 Fixation and its Main Contributor in a Flooded Rice-soil System by a Novel Air-tight 15N2 Incubation Technique under Natural Sunshine for 70D**
Qicheng Bei[1], Gang Liu[1], Haoye Tang[1], Cadisch Georg[2], Rasche Frank[2] and Zubin Xie[1]*
[1]Chinese Academy of Sciences, China; [2]University of Hohenheim, Germany

O16-3 14:30 **Resource driven Community Dynamics of Assimilatory Archaeal Denitrifiers in Temperate Paddy Soils**
Maria Alexandra Cucu[1], Sven Marhan[2], Daniel Said-Pullicino[1], Luisella Celi[1], Ellen Kandeler[2] and Frank Rasche[2]*
[1]University of Turin, Italy; [2]University of Hohenheim, Germany

O16-4 14:50 **Ureolytic Microbial Community Composition in Maryland Soils: A Missing Link in Understanding Landscape-scale Nitrogen Movement to Surface Waters?**
Kristin A. Fisher*, Stephanie A. Yarwood and Bruce R. James, University of Maryland, USA

O16-5 15:10 **DNA Metabarcoding of Fungal Populations in Restored Colliery Spoil Soils**
Andrew Detheridge, Gareth Griffiths and John Scullion
Aberystwyth University, United Kingdom

15:30-16:20 Cofee Break & Poster Session 1 (3F, 5F Lobby)

16:30-20:00 Soil Parade (The Seaes Hotel & Resort)

Oral Session No. 17

Baekrok A+B (1F)

[IDS9] Key Processes and Factors to Mitigate Land Degradation

June 10 (Tue), 10:10 - 12:40

Convenor: Hatano Ryusuke (Hokkaido University, Japan/ Kimura Sonoko D. (Tokyo University Agriculture and Technology, Japan)/ Suwardi (Bogor Agricultural University, Indonesia)

O17-1 10:10 **Degradation and Progradation of Soil Organic Matter Pools and Functions by Land Use**
Yakov Kuzyakov*, University of Gottingen, Germany

O17-2 10:40 **Factors Affecting Soil Erosion on an Oceanic Island in Ogasawara, Japan: the Effects of Soil Chemical Properties and Landscape**
Syuntaro Hiradate[1]*, Sayaka Morita[1], Kenji Hata[2], Takeshi Osawa[1], Kyoko Sugai[2] and Naoki Kachi[2]
[1]National Institute for Agro-Environmental Sciences (NIAES), Japan; [2] Tokyo Metropolitan University, Japan

O17-3 11:00 **Study on Soil Eco-hydrological Function during the Degradation Process of Mountain Meadow**
Zhang Xue-Ling, Guo Xiao-Min*, Niu De-Kui, Zhang Wen-Yuan and Li Zhi
Jiangxi Agricultural University, China

O17-4 11:20 **Confounding Effects of Climate Change and Livestock Grazing on Pasture Land Degradation in Mongolia**
Sinkyu Kang*, Bolorerdene Lkhamsuren and Keunchang Jang
Kangwon National University, Korea

O17-5 11:40 **Sustainable Peatland Management for Mitigating Greenhouse Gas Emission**
M. Utomo[1]*, B. Sumawinata[2], B.I. Setiawan[2], Suwardi[2] and Dian Novarina[3]
[1] University of Lampung, India; [2] Bogor Agricultural University, India; [3] Riau Andalan Pulp and Paper, India

O17-6 12:00 **Reduced Tillage Systems for Sustainable Arable Farming in North-west Europe - an integrated Assessment of Soil Properties, Soil Ecosystem Services, and Socio-economic Aspects**
Guenola Peres[1]*, Mirjam Pulleman[2], Jack Faber[3], Mickael Corson[1], Stephen Crittenden[2], Vincent Hallaire[1], Djilali Heddadj[4], Safya Menasseri[1], Veronika Mikos[5], Wijnand Sukkel[2] and Daniel Cluzeau[6]
[1] INRA, Agrocampus-Ouest UMR SAS, France; [2]Wageningen University and Research Centre, Netherlands; [3]Alterra, Wageningen, Netherlands; [4]CRAB, Recherche appliquee - Pole agronomie, France; [5]ECNC-European Centre for Nature Conservation, Netherlands; [6]Universite Rennes 1 UMR CNRS EcoBio, France

O17-7 12:20 **Soil Degradation, Hunger, and Sustainable Development in Subsaharan Africa: Critical Assessment of the "African Soil Crisis" and Illustrative Case Analysis in Southern Mauritania**
Ginger Tissier[1] and Philippe Baveye[2]*
[1]Cornell University, USA; [2]Rensselaer Polytechnic Institute, USA

Oral Session No. 18

Yeongju A+B (1F)

[IDS10] Impact of Bioenergy Cropping on Soils and the Environment

June 10 (Tue), 10:10 - 12:40

Convenor: Dokyoung Lee (University of Illinois at Urbana-Champaign, USA)/ Chang Oh Hong (Pusan National University, Korea)

O18-1 10:10 **Will Reliance on Bioenergy Affect Climate-regulating Services of Ecosystems?**
Evan Delucia
University of Illinois Urbana-Champaign, USA

O18-2 10:40 **Farming Strategies to Feed People, Facilitate Essential Soil Services, and Fuel the Economy**
Alan Franzluebbers*
USDA-Agricultural Research Service, USA

O18-3 11:00 **Soil Properties and Corn Yield Response to Residue Removal, Tillage, and N Rates**
Maria Villamil and Emerson Nafziger
University of Illinois, USA

O18-4 11:20 **Changes in Land Use of Contaminated Agricultural Soils from Annual Crops to Perennial Bioenergy Crops Impact their Trace Element Availability**
Muhammad Iqbal[1]*, Isabelle Lamy[2] and Alain Bermond[3]
[1]PMAS Arid Agriculture University Rawalpindi, Pakistan; [2] INRA, France; [3] AgroParisTech, France

O18-5 11:40 **Impact of Agroforestry Plantings for Bioenergy Production on Soil Organic Carbon**
Thomas Sauer[1]*, Yury Chendev[2], Guillermo Hernandez Ramirez[3], Alexsandr Petin[2], Richard Hall[4], Larisa Novyikh[2] and Eugeniy Zazdravnyikh[2]
[1]Agricultural Research Service National Laboratory for Agriculture and the Environment, USA; [2] Belgorod State University, Russia; [3] University of Alberta, Canada; [4] Iowa State University, USA

O18-6 12:00 **Soil Carbon Dioxide Respiration in Switchgrass Crops: Assessing Annual, Seasonal and daily Flux Patterns in East Tennessee**
Jaehoon Lee[1], Julie Mcknight[1], Leah Skinner[2], Andrew Sherfy[1], Donald Tyler[1] and Burton English[1]
[1]University of Tennessee, USA; [2]Environmental Resources Management, USA

O18-7 12:20 **Environmental Impact of Growing Herbaceous Perennials for Bioenergy**
Vance Owens*
South Dakota State University, USA

Oral Session No. 19

201 (2F)

[IDS17] Surface Soil Resources Inventory and Integration: Soil Value and Erosion

June 10 (Tue), 10:10 - 12:50

Convenor: Sung Chul Kim (Chungnam National University, Korea)

O19-1 10:20 **Crop Productivity, Ground Cover and Wind Erosion Likelihood - Modelling and Mapping Surface Soil Protection for In-Season and Long-Term Risk Management**
Richard MacEwan, Elizabeth Morse McNabb, Jonathan Hopley, Eileen Perry, Rob Clark, Kathryn Sheffield
Department of Environment & Primary Industries, Australia

O19-2 10:40 **What is the Cost of Soil Erosion in Europe?**
Panos Panagos and Luca Montanarella
European Commission, Joint Research Centre, Italy

O19-3 11:00 **Soil Erosion Status and Management Strategies in Taiwan**
Zueng-Sang Chen[1]* and Su-Chin Chen[2]
[1] National Taiwan University, Taiwan; [2] National Chung Hsing University, Taiwan

11:20 Break

O19-4 11:30 **ArcGIS-based SATEEC (SATEEC 2014) for Soil Erosion Estimation**
Younghun Jung, Gwanjae Lee, Kyoung Jae Lim
Kangwon National University, Korea

O19-5 11:45 **Best Management Practice for Preventing Soil Loss in Highland Agricultural Field**
Sung Chul Kim[1], Young Kyu Hong[1], Kyoung Jae Lim[2], and Jae E. Yang[2]
[1] Chungnam National University, Korea; [2] Kangwon National University, Korea

O19-6 12:00 **Effect of the Countermeasures for Prevention of Soil Erosion in Korea and DPRK**
K. C. Eom[1], P. K. Jung[1], J. S. Ryu[2], S. K. Ha[2]
[1]Sejong Institute of Data Analysis[SEIDA], Korea;
[2] National Institute of Crop Science, RDA, Korea

O19-7 12:15 **Spatiotemporal Variation of Erosion and Deposition using the Catchment-scale Soil Erosion Model (C-SEM)**
Giha Lee[1], Jong Chul Jeong[2]
[1]Kyungpook National University, Korea; [2]Namseoul University, Korea

O19-8 12:30 **Towards Sustainable Topsoil Management in South Korea**
Youngju Kim[1], Kyoung Jae Lim[2], Sung-Chul Kim[3], Rog-young Kim[2], Jae E. Yang[2], and Sang-il Hwang[1]*
[1] Korea Environment Institute, Korea; [2]Kangwon National University, Korea; [3] Chungnam National University, Korea

Oral Session No. 20

Halla A+B (3F)

[IDS2] Global Soil Partnership

June 10 (Tue), 10:10 - 12:40

Convenor: Ronald Vargas (Food and Agriculture Organization of the United Nations - FAO, Italy)

O20-1 10:10 **The Intergovernmental Technical Panel on Soils (ITPS)**
Luca Montanarella*
European Commission, Italy

O20-2 10:40 **A 10-Year Plan of Action for Pillar 1 of the Global Soil Partnership to Globally Promote Sustainable Soil Management for Soil Protection, Conservation and Sustainable Productivity**
Liesl Wiese[1]* and Ronald Vargas[2]
[1]Agricultural Research Council - Institute for Soil, Climate and Water, South Africa; [2]Global Soil Partnership Secretariat, FAO(Food and Agriculture Organization), Italy

O20-3 11:00 **Changing Soil Science Education for Confronting Challenges**
Milkha Aulakh*
MSKJ University of Agriculture & Technology, India

O20-4 11:20 **Pillar Two of the Global Soil Partnership, from Concept to Endorsement**
Willie Towers[1]*, Arwyn Jones[2] and Gabriele Broll[3]
[1]The James Hutton Institute, United Kingdom;
[2]European Commission, DG Joint Research Centre, Institute for Environment & Sustainability,Italy; [3]University of Osnabrueck,Germany

O20-5 11:40 **The Challenges for the Eurasian Soil Partnership**
Pavel Krasilnikov*,
Moscow State University, Russia

O20-6 12:00 **Globalsoilmap's Oceania Node: Towards the First Node Version of a Finescale Soil Grid**
Mike Grundy[1]*, Allan Hewitt[2], Alex Mcbratney[3], Muhrizal Sarwani[4] and Inoke Ratukalou[5]
[1]CSIRO, Australia; [2]Landcare Research, New Zealand; [3]The University of Sydney, Australia; [4]Indonesian Centre for Agricultural Land Resources Research and Development, Indonesia; [5] Secretariat of Pacific Community, Fiji

Oral Session No. 21

Samda (3F)

[IDS7] The Soil Health: Human Health Nexus

June 10 (Tue), 10:10 - 12:40

Convenor: Ian Pepper (University of Arizona, USA)/ Sally Brown (University of Washington, USA)

O21-1 10:10 **The Soil Health-human Health Nexus**
Ian L. Pepper*
University of Arizona, USA

O21-2 10:40 **Urban Agriculture-ground Zero for Soils and Human Health**
Sally Brown*
University of Washington, USA

O21-3 11:00 **Relevance of Soil Climate Variations and Microclimate for the Distribution of Ticks and Tick Borne Diseases in South-west Germany**
Stefan Norra[1]*, Denise Bohnke[1], Reiner Gebhardt[1], Martin Kull[1], Benjamin Jonderko[1], Michael Wandler[1], Trevor Petney[1], Patrick Sebastian[2], Nina Littwin[1], Miriam Pfaffle[1], Florian Hogewind[1] and Reiner Oehme[2]
[1]Karlsruhe Institute of Technology, Germany; [2]Federal State Health Authority of Baden-Wurttemberg, Germany

O21-4 11:20 **Relationship of Soil Cadmium Content and Wheat Grain Cadmium Concentration in Some Wheat Cultivated Regions of Iran**
Ali Cherati[1]*, Jahanbakhsh Mirzavand[1], Saeid Rezaeian[1] and Maliheh Khanlarian[2]
[1]Soil and Water Research Institute, Iran; [2]Mazandaran School Training and Education Organization, Iran

O21-5 11:40 **Escherichia Coli O157:H7 Deposition, Survival and Toxic Genes Expression on Soil Clay Minerals in a Flow System**
Peng Cai*
Huazhong Agricultural University, China

O21-6 12:00 **Current Status of Soil Contamination in E-waste Recycling Sites in South China**
Yingxin Wu, Qingqi Lin, Yan Wu, Xiongfei Huang and Rongliang Qiu*
Sun Yat-sen University, China

O21-7 12:20 **Influence of Environmental Factors on Ecology of Soils of Shirvan Region of Azerbaijan**
Tubukhanim Gasimzade
Azerbaijan National Academy of Science, Azerbaidjan

12:40-13:40 Lunch (Tamna B)

Oral Session No. 22

Baekrok A (1F)

[WG6] Urban Soils-Properties, Functions and Evolution

June 10 (Tue), 13:40 - 15:30

Convenor: Jean Louis Morel (Université de Lorraine, France)/ Zhang Ganlin (CAS, China)/ Wolfgang Burghardt (University Duisburg-Essen, Germany)/ Kye Hoon Kim (University of Seoul, Korea)

O22-1 13:40 **The Economics of Soil in European Urban and Peri-urban Contexts**
Geertrui Louwagie[1], Mark Kibblewhite[2] and Joe Morris[3]
[1]European Environment Agency, Denmark; [2]MK Soil Science, United Kingdom; [3]Morris Resource Economics Ltd, United Kingdom

O22-2 14:10 **Assessment and Monetization of Ecosystem Services of Soils in Urban Regions for the Example of Karlsruhe**
Stefan Norra*
Karlsruhe Institute of Technology, Germany

O22-3 14:30 **Carbon Capture in Urban Soils**
Carla-Leanne Washbourne[1], Phil Renforth[2], Elisa Lopez-Capel[3] and David Manning[3]*
[1]University College, United Kingdom; [2]Oxford University, United Kingdom; [3]Newcastle University, United Kingdom

O22-4 14:50 **Features of Soils of Abandoned Industrial and Mining Areas for Forestry**
Wolfgang Burghardt and Sibylle Herrmann
University Duisburg-Essen, Germany

O22-5 15:10 **Ekranic and Urbic Technosols of Debrecen**
Przemyslaw Charzynski[1]*, Renata Bednarek[1], Emilia Szynkowska[1] and Gabor Sandor[2]
[1]Nicolaus Copernicus University, Poland; [2]University of Debrecen, Hungary

Oral Session No. 23

Baekrok B (1F)

[DS3] Modelling of Soil Properties and Processes - Challenges and Opportunities

June 10 (Tue), 13:40 - 15:30

Convenor: Kai Uwe Totsche (Institute for Geosciences, Germany)/ Daniel Tunega (University of Natural Resources and Life Sciences, Austria)

O23-1 13:40 **Molecular Simulation Techniques for Complex Soil Systems**
Chris Oostenbrink*
University of Natural Resources and Life Sciences, Austria

O23-2 14:10 **Visualisation and Validation of the Water Release Curve using X-ray Computed Tomography**
Saoirse Tracy[1]*, Keith Daly[2], Neil Crout[1], Malcolm Bennett[1], Tony Pridmore[1], Ian Sinclair[2], Tiina Roose[2] and Sacha Mooney[1]
[1]University of Nottingham, United Kingdom; [2]University of Southampton, United Kingdom

O23-3 14:30 **Building 3D Soil Models Combining X-ray Ct and 3D Printing Technology. First Applications to a Loamy Soil**
Nicola Dal Ferro and Francesco Morari*
University of Padova, Italy

O23-4 14:50 **A Computerized Model of Soil Structure Integrating Biological and Physical Processes to Assess the Impact of Reduced Tillage**
Alexis Le Couteulx*, Guenola Peres, Cedric Wolf and Vincent Hallaire
INRA, France

O23-5 15:10 **Does the Fractal Behavior of Surface Soil Water Storage Holds at Multiple Depths?**
Asim Biswas
Mcgill University, Canada

Oral Session No. 24

Yeongju A (1F)

[DS2] A: Soil Development and Soil Properties and Functions

June 10 (Tue), 13:40 - 15:30

Convenor: Martin. H. Gerzabek (University of Natural Resources and Life Sciences Vienna, Austria)/ Franz Zehetner (University of Natural Resources and Life Sciences Vienna, Austria)

O24-1 13:40 **Evolution of Soil Functionality in Natural and Artificial Soil Systems**
Ingrid Koegel-Knabner*, Cordula Vogel, Geertje Johanna Pronk, Katja Heister, Carsten W. Mueller and Carmen Hoeschen
Technische Universitaet Muenchen, TUM, Germany

O24-2 14:10 **Changes in Soil Properties due to Afforestation of Former Agricultural Lands in the Boreo-nemoral Zone**
Raimonds Kasparinskis*, Olgerts Nikodemus, Nauris Rolavs and Anda Ruskule
University of Latvia, Latvia

O24-3 14:30 **Effects of the Mound-building Termite (Macrotermes Bellicosus) on Iron (Oxyhydr) oxide Mineralogy in Highly Weathered Tropical Soils**
Shin Abe
Kinki University, Japan

O24-4 14:50 **Initial Stage Processes of Soil Development Processes observed by a Field Experiment**
Bin Zhang[1], Na Li[2], Shuihong Yao[3], Yanli Liu[4] and Xiaozeng Han[2]
[1] CAAS, CAS, China; [2]CAS, China; [3]CAAS, China; [4]Shangdong Agricultural University, China

O24-5 15:10 **The Parental Source of the Terra Rossa like Soils on the Liuchiuyu Island, Taiwan**
Heng Tsai[1]*, Wen-Shu Huang[1], Shiuh-Tsuen Huang[2] and Zeng-Yi Hseu[3]
[1] National Changhua University of Education, Taiwan; [2] National Taichung University of Education, Taiwan; [3] National Pingtung University of Science and Technology, Taiwan

Oral Session No. 25

Yeongju B (1F)

[C2.5-3] A: Mechanism Controlling Greenhouse Gas Emissions from Soils

* Co-organized by Systems & Synthetic Agrobiotech Center

June 10 (Tue), 13:40 - 15:30

Convenor: Pil Joo Kim (Gyeongsang National University, Korea)/ Paul Bodelier (Netherlands Institute of Ecology, Netherlands)

O25-1 13:40 **Management Options to Control Methane Emissions from Rice Paddy Soils**
Kazuyuki Yagi
National Institute for Agro-Environmental Sciences, Japan

O25-2 14:10 **Greenhouse Gas Emission from Organic Amendments applied Soils- Emission Processes, Controlling Factors, and Mitigation Options**
Ramya Thangarajan[1]*, Nanthi S Bolan[1], Guanglong Tian[2], Ravi Naidu[1] and Anitha Kunhikrishnan[3]
[1] University of South Australia, Australia; [2]Metropolitan Water Reclamation District of Greater Chicago, USA; [3]National Academy of Agricultural Science, Korea

O25-3 14:30 **Life-cycle Analysis of Dryland Greenhouse Gases Affected by Cropping Sequence and Nitrogen Fertilization**
Upendra Sainju*, William Stevens and Thecan Caesar-Tonthat
USDA, Agricultural Research Service, USA

O25-4 14:50 **Eddy-covariance Measurements of CH4 and CO2 Fluxes from a Reed-covered Fen in Southwest Germany**
Thilo Streck
University of Hohenheim, Stuttgart, Germany

O25-5 15:10 **Carbon Dioxide Emissions and Soil Properties in Intact and Disturbed Tropical Peatlands of Indonesia**
Louis Pierre Comeau[1]*, Kristell Hergoualc'h[2], Jo Smith[3], Louis Verchot[2] and Jodie Hartill[3]
[1] University of Aberdeen / Center for International Forestry Research, Canada; [2]Center for International Forestry Research, Indonesia; [3] University of Aberdeen, United Kingdom

Oral Session No. 26

201 (2F)

[C2.1-2] Biophysical Aspects of Soil Function - Exploring Soil Hidden Frontiers

June 10 (Tue), 13:40 - 15:30

Convenor: Scott Jones (Utah State University, USA)/ Baoguo Li (China Agricultural University, China)

O26-1 13:40 **Understanding Emergent Responses of Soils to Environmental Change: What Do We Know about Upscaling?**
Philippe Baveye[1]*, Wilfred Otten[2], Ruth Falconer[2], Simona Hapca[2] and Edith Perrier[3]
[1] Rensselaer Polytechnic Institute, Troy, USA; [2]Abertay University, United Kingdom; [3] IRD, Bondy, France

O26-2 14:10 **Mechanism of Increase in Hydrophobicity of a Forest Andisol by Thermal Impact**
Taku Nishimura*, Hiromi Imoto and Masaru Mizoguchi
The University of Tokyo, Japan

O26-3 14:30 **Effect of Soil Type and Bulk Density on the Stem and Root Lodging Resistance of Wheat**
Nyaz Sulaiman* and Mitch Crook*
Harper Adams University, United Kingdom

O26-4 14:50 **Spatial Variability of Crop Yield on an Eroded Silt Loam Soil with Varying Depth to Root Restrictive Layer**
Francisco Arriaga[1], Dalvan Reinert[2] and Birl Lowery[1]
[1]University of Wisconsin-Madison, USA; [2]Federal University of Santa Maria, Brazil

O26-5 15:10 **Soil Structure and Its Functions in Ecosystems: Scale Matter & Phase Matter**
Xinhua Peng* and Hu Zhou
Institute of Soil Science, China

Oral Session No. 27

202 (2F)

[C1.1-1] The Role of Environment on Soil Formation: Morphological Indicators

June 10 (Tue), 13:40 - 15:30

Convenor: Daniela Sauer (Dresden University of Technology, Germany)/ Curtis Monger (New Mexico State University, USA)

O27-1 13:40 **Quantification by Image Analysis on Soil Thin Sections of Lessivage and Bioturbation Rates in Soils in Response to Land Use Change and Recycling of Organic Residues**
Ophelie Sauzet*, David Montagne*, Cecilia Cammas, Jean Marc Gilliot and Manon Bajard
AgroParisTech, France

O27-2 14:10 **Identification of Relict Carbonate Pedofeatures in Modern Chernozems**
Irina Kovda[1]*, Evgeny Morgun[2], Sergey Oleynik[3], Marina Lebedeva[4] and Vasiliy Shishkov[1]
[1]Institute of Geography, Russia; [2]Moscow State University, Russia; [3]Princeton University, USA; [4]Dokuchaev Soil Institute, Russia

O27-3 14:30 **Isotopic Techniques applied to Environmental Changes in Histosols in Itatiaia National Park, Brazil**
Paula Fernanda Soares[1], Lucia Helena Cunha Dos Anjos[1]*, Luiz Carlos Ruiz Pessenda[2] and Marcos Gervasio Pereira[1]
[1]Federal Rural University of Rio de Janeiro, Brazil; [2]University of Sao Paulo, Brazil

O27-4 14:50 **Effects of Anthropogenic Interventions on the Entisols of Al-Khoud Dam Area in a Dry Region of Oman**
Said Al-Ismaily, Ali Al-Maktoumi, Anvar Kacimov, Hamad Al-Busaidi and Said Al-Saqri
Sultan Qaboos University, Oman

O27-5 15:10 **Digital Soil Mapping and Classification for Sustainable Crop Cultivation in Northeast, Akwa Ibom State, Nigeria Using Digital Elevation Model and Geographic Information System**
Udeme Akpan
University of Uyo, Nigeria

Oral Session No. 28

Halla A (3F)

[C3.5-1] Water Conservation Technologies and Impacts on Sustainable Dry Land Agriculture

June 10 (Tue), 13:40 - 15:30

Convenor: Takashi Kosaki (Tokyo Metropolitan University, Japan)

O28-1 13:40 **Droughts and Climate Change in Bulgaria: Assessing Maize Crop Risk and Irrigation Requirements in Relation to Soil and Climate Region**
Zornitsa Popova[1]*, Maria Ivanova[1], Vesselin Alexandrov[2], Luis Pereira[3], Milena Kercheva[1], Katerina Doneva[1] and Diogo Martins[3]
[1]Institute of Soil Science Agrotechnology and Plant Protection N.Poushkarov, Bulgaria; [2]National Institute of Meteorology and Hydrology, Bulgaria; [3]Technical University of Lisbon, Portugal

O28-2 14:10 **Effect of Mulching on Dryland Soil Water, Winter Wheat Yield, and Water Use Efficiency**
Jun Wang[1]*, Wenzhao Liu[2], Quanquan Liu[1] and Upendra M. Sainju[3]
[1]Northwest University, China; [2]CAS & MWR, China; [3]Northern Plains Agricultural Research Lab, USDA-ARS, USA

O28-3 14:30 **"Fallow Band System", a Do-nothing Practice for Controlling Desertification and Improving Crop Production in the Sahel, West Africa**
Kenta Ikazaki[1]*, Hitoshi Shinjo[2], Ueru Tanaka[3], Satoshi Tobita[4], Shinya Funakawa[2] and Takashi Kosaki[1]
[1]Tokyo Metropolitan University, Japan; [2]Kyoto University, Japan; [3]Research Institute for Humanity and Nature, Japan; [4]Japan International Research Center for Agricultural Sciences, Japan

O28-4 14:50 **Soil Infrastructure Evolution and Its Effect on Water Transfer Processes under Contrasted Tillage Systems**
Nargish Parvin*, Marie Chelin, Marie-Pierre Hiel, Sarah Garre, Bernard Bodson and Aurore Degre
Gembloux Agro-Bio Tech, Belgium

O28-5 15:10 **Soil Hydraulic Properties and Moisture Regime as Affected by Agronomic Management Practices in a Clayey Ultisol**
Jiazhou Chen* and Lirong Lin
Huazhong Agricultural University, China

Oral Session No. 29

Halla B (3F)

[C2.4-1] Mineralogy and Reactivity of Soil Microsites

June 10 (Tue), 13:40 - 15:50

Convenor: Dean Hesterberg (NC State University, USA)/ Markus Grafe (Universidad de las Americas, Ecuador)

O29-1 13:40 **Synchrotron-based ×-Xafs, Nanosims, and Afm Microscopy as Novel Tools to Assess Micro- and Nanosite Mineralogy and Reactivity of Soils and Soil Particles**
Joerg Prietzel[1], Florian Werner[1], Ingrid Koegel-Knabner[1], Carsten Mueller[1], Carmen Hoeschen[1], Kai Uwe Totsche[2] and Karin Eusterhues[2]
[1]Technische Universitaet Muenchen, Germany; [2]University Jena, Germany

O29-2 14:10 **Characterisation of Carnotite Grain and Cement Boundaries using Micro Xrd and Xanes Analyses**
Markus Grafe[1]*, Ryan Tappero[2], Caroline Johnson[1]* and Jian Li[1]
[1] Commonwealth Scientific Industrial Research Organisation, Australia; [2] Brookhaven National Laboratory, USA

O29-3 14:30 **Phosphate Effects on Cadmium(ii) Sorption to Ferrihydrite**
Charlotta Tiberg*, Ingmar Persson and Jon Petter Gustafsson
Swedish University of Agricultural Sciences, Sweden

O29-4 14:50 **Dissolution of Phosphate-adsorbed Goethite by Desferrioxamine B**
Priscila Ung and Jang-Hung Huang*
National Chung Hsing University, Taiwan

O29-5 15:10 **Arsenic Accumulation in Soil Matrices in Relation to Microsite Composition**
Dean Hesterberg[1]*, Montserrat Fuentes[1], Matthew Polizzotto[1], Joseph Guinness[1], Ryan Tappero[2], Chuanzhen Zhou[1], Keith Jones[2] and Eva Johannes[1]
[1]North Carolina State University, USA; [2]Brookhaven National Laboratory, USA

O29-6 15:30 **Interspecies Transfer and Cycling of Phosphorus in Agricultural Soils**
Deb Jaisi, Sunendra Joshi, Wei Li and Xiaona Li
University of Delaware, USA

Oral Session No. 30

Samda (3F)

[C1.5-2] Quantification and Application of Uncertainty in Pedometrics

June 10 (Tue), 13:40 - 15:30

Convenor: A-Xing Zhu (University of Wisconsin-Madison, USA)/ Lin Yang (Chinese Academy of Sciences, China)

O30-1 13:40 **How much Soil Spatial Information do We Need to Address Critical Uncertainties in Development Decisions?**
Keith Shepherd
World Agroforestry Centre (ICRAF), Kenya

O30-2 14:10 **A Non-probabilistic Approach to Estimate Prediction Uncertainty with Sparse Ad Hoc Samples**
Jing Liu* and A-Xing Zhu
University of Wisconsin Madison, USA

O30-3 14:30 **Changing Epistemic Uncertainties in Soil Classification and Digital Mapping**
David Rees[1]*, K.k. Benke[1] and J. Hopley[2]
[1] Spatial Sciences, Australia; [2] Epsom Centre, Australia

O30-4 14:50 **Uncertainty Directed Digital Soil Mapping**
A-Xing Zhu
University of Wisconsin-Madison, USA

O30-5 15:10 **Bayesian Geostatistical Modeling of Soil Organic Carbon with Uncertainty Analysis across a highly Heterogeneous Landscape**
Xiong Xiong[1]*, Sabine Grunwald[1], D. Brenton Myers[2], Jongsung Kim[1], Willie G. Harris[1], Nicolas B. Comerford[1] and Nikolay Bliznyuk[1]
[1] University of Florida, USA; [2] University of Missouri, USA

Oral Session No. 31

401 (4F)

[C4.5-1] The Soil Underfoot: Infinite Possibilities for a Finite Resource

June 10 (Tue), 13:40 - 15:30

Convenor: G. Jock Churchman (University of Adelaide, Australia)/ Masanori Okazaki (Ishikawa Prefectural University, Japan)

O31-1 13:40 **Bread and Soil in Ancient Rome: A Vision of Abundance and an Ideal of Order based on Wheat, Grapes, and Olives**
Bruce James[1]*, Winfried Blum[2] and Carmelo Dazzi[3]
[1]University of Maryland, USA; [2]University of Natural Resources and Life Sciences (BOKU), Austria; [3]University of Palermo, Italy

O31-2 14:10 **Climate Change-an Underfoot Perspective**
Kevin Tate
Landcare Research, New Zealand

O31-3 14:30 **Picturing the Soil: Artistic Approaches to Raising Soil Awareness**
Alexandra Toland* and Gerd Wessolek
Technical University of Berlin / German Soil Science Society (DBG) Commission VIII, Germany

O31-4 14:45 **The Finite Soil Resource for Sustainable Development: The Case of Taiwan**
Zeng-Yei Hseu[1]* and Zueng-Sang Chen[2]
[1]National Pingtung University of Science and Technology, Taiwan; [2]National Taiwan University, Taiwan

O31-5 15:00 **Seeing Soil**
Deborah Koons Garcia
Lily Films, USA

O31-6 15:15 **The Soil Underfoot: The Concept of the Book and its Realization**
Jock Churchman[1]* and Edward Landa[2]
[1]University of Adelaide, Australia; [2]University of Maryland, USA

Oral Session No. 32

402 (4F)

[C1.4-1] Marginal Soils: The Classification of Technogenic, Subaqueous, and Extraterrestrial Soil-like Bodies

June 10 (Tue), 13:40 - 15:30

Convenor: John M. Galbraith (Virginia Polytechnic Institute and State University, USA)/ David C. Weindorf (Texas Tech University, USA)

O32-1 13:40 **Pedogenic Processes in Anthropogenic Mine Soils**
Pieter Vandeventer
North West University, South Africa

O32-2 14:10 **Human-altered and Human-transported Soils: A Bottom-up Approach in us Soil Taxonomy**
John Galbraith[1] and Joseph Chiaretti[2]
[1] Virginia Tech, USA; [2]USDA-Natural Resources Conservation Service, USA

O32-3 14:30 **Human Transported and Altered Material as a Diagnostics Key Feature for Technosol**
Jaroslava Sobocka[1]*, Juraj Balkovic[2] and Zoltan Bedrna[2]
[1]Soil Science and Conservation Research Institute, Slovakia; [2]Comenius University Bratislava, Slovakia

O32-4 14:50 **Introduced Soils of Urban Areas and their Placement in the World Reference Base for Soil Resources**
Boris Aparin and Elena Sukhacheva*
The Dokuchaev Central Soil Science Museum, Russia

O32-5 15:10 **Agro-management Practices on Tropical Peatland for Mitigation of Soil C Flux**
Lulie Melling*, Angela Tang and Angelyn Kloni
Tropical Peat Research Laboratory Unit, Malaysia

15:30-16:20 Cofee Break & Poster Session 2 (3F, 5F Lobby)

Oral Session No. 33

Baekrok A (1F)

[DS6] Soils in the Anthropocene Era: Global Health, Food Security, and Human Health

June 10 (Tue), 16:20 - 18:10

Convenor: Charles W. Rice (Kansas State University, USA)/ Ganga Hettiarachchi (Kansas State University,USA)

O33-1 16:20 **Linking Soil Health to Human Health**
Charles William Rice
Kansas State University, USA

O33-2 16:50 **Linking Soils to Global Food Security**
Gary Pierzynski
Kansas State University, USA

O33-3 17:10 **Land Take and Food Security: What We are Loosing?**
Ciro Gardi, Arwyn Jones, Panos Panagos and Luca Montanarella
Joint Reserach Center - European Commission, Italy

O33-4 17:30 **Sustainable Soil Fertility Improvement for Healthy Crop Production; a Panacea for Food Security**
Sifau Adejumo*, Adeyinka Awoyode and Adeniyi Togun
University of Ibandan, Nigeria

Oral Session No. 34

Baekrok B (1F)

[C3.5-2] Techniques to Manage Contaminated Arable Soils

June 10 (Tue), 16:20 - 18:10

Convenor: Zueng-Sang Chen (National Taiwan University, Taiwan)/ Dar-Yuan Lee (National Taiwan University, Taiwan)

O34-1 16:20 **Arsenic Accumulation and Speciation in Rice Grains of Various Genotypes Grown in As-contaminated Paddy Soils**
Chien-Hui Syu*, Pei-Yu Jiang, Chia-Chen Huang and Dar-Yuan Lee*
National Taiwan University, Taiwan

O34-2 16:50 **Facilitating Remediation of E-waste Contaminated Soil by Mixed Chelants and Different Washing Schemes**
Jingzi Beiyuan, Nick Siu and Dan Tsang*
Hong Kong Polytechnic University, Hong Kong

O34-3 17:10 **Relevance of Soil Bioindicators for Risk Assessment, Monitoring and Soil Characterization in Contaminated Soils. Results from the French National "Bioindicators Programme."**
Guenola Peres[1]*, Benjamin Pauget[2], Antonio Bispo[3], Cecile Grand[3], Marina Le Guedard[4], Olivier Faure[5], Samuel Dequiedt[6], Mickael Coeurdassier[2], Salima Taibi[7], Isabelle Gattin[7], Mickael Hedde[8], Daniel Cluzeau[9], Jennifer Harris-Hellal[10], Adnane Hitmi[11] and Annette De Vaufleury[2]
[1] INRA Agrocampus Ouest UMR SAS, France; [2] UMR UFC/CNRS, France; [3]ADEME, France; [4]Universite Victor Segalen Bordeaux 2, France; [5]ENS des Mines de St-Etienne, France; [6] INRA Dijon- LMSE, France; [7]Esitpa (School of Agriculture Engineer), France; [8] INRA Versailles-Grignon, France; [9]Universite Rennes 1, France; [10] BRGM, France; [11] IUT de Clermont-Ferrand, France

O34-4 17:30 **Sequestering a Persistent Organochlorine with Organic Fertilizer and Organic Amendment to Increase Food Safety in Martinique**
Paula Fernandes[1]*, Thierry Woignier[2], Florence Clostre[1], Alain Soler[1], Luc Rangon[2] and Magalie Lesueur-Jannoyer[1]
[1] CIRAD, Martinique; [2]IRD, Martinique

O34-5 17:50 **Phytoremediation of Pyrene Contaminated Soils Amended with Compost and δ-Mno2 and Planted wth Ryegrass and Soybean**
Shui Wen Chang Chien[1], S.h. Chen[2], Min-Chao Wang[1]*, J.j. Chang[1] and K. Seshaiah[3]
[1] Chaoyang University of Technology, Taiwan; [2] Chinese Cultural University, Taiwan; [3] Sri Venkateswara University, India

Oral Session No. 35

Yeongju A (1F)

[DS2] B: Soil Development and Soil Properties and Functions

June 10 (Tue), 16:20 - 18:10

Convenor: Martin. H. Gerzabek (University of Natural Resources and Life Sciences Vienna, Austria)/ Franz Zehetner (University of Natural Resources and Life Sciences Vienna, Austria)

O35-1 16:20 **Interpreting Soil Organic Matter Cycling from Radiocarbon Measurements in Soils**
Susan Trumbore
Max-Planck Institute for Biogeochemisty, Germany

O35-2 16:50 **Digital Morphometrics and Rapid Pedology**
Alfred Hartemink
University of Wisconsin - Madison, USA

O35-3 17:10 **Changes of Soil Properties during Podzol Development in S Norway**
Daniela Sauer[1], Siri Svendgard-Stokke[2], Ragnhild Sperstad[2], Rolf Sørensen[3] and Markus Fuchs[4]
[1]Dresden University of Technology, Germany; [2]The Norwegian Forest and Landscape Institute, Norway; [3]Norwegian University of Life Sciences, Norway; [4]Justus-Liebig-University Giessen, Germany

O35-4 17:30 **X-Ray Photoelectron Spectroscopy (XPS) as a Convincing Tool to Relate Changes in Wettability to Surface Chemical Composition during Soil Formation**
Susanne Karoline Woche[1]*, Marc-Oliver Goebel[1], Georg Guggenberger[1], Christian Schurig[2], Matthias Kaestner[3] and Joerg Bachmann[1]
[1] Leibniz Universitaet Hannover, Germany; [2]Technische Universitaet Muenchen, Germany; [3]Helmholtz Centre for Environmental Research - UFZ, Germany

O35-5 17:50 **Soil-Lt: Automatic and Continuous Determination of Shrinkage Behavior of Soils**
Sebastian K. Pagenkemper[1]*, Katja Richter[2], Heinrich Unbekannt[2], Manfred Seyfarth[2] and Rainer Horn[1]
[1] University Kiel, Germany, [2] UGT GmbH, Germany

Oral Session No. 36

Yeongju B (1F)

[C2.5-3] B: Mechanism Controlling Greenhouse Gas Emissions from Soils

* Co-organized by Systems & Synthetic Agrobiotech Center

June 10 (Tue), 16:20 - 18:10

Convenor: Pil Joo Kim (Gyeongsang National University, Korea)/ Yahai Lu (China Agricultural University, China)

O36-1 16:20 **Microbial Diversity and Traits as a Modulating Factor of Methane Consumption in Soils**
Paul L.E. Bodelier
Netherlands Institute of Ecology (NIOO-KNAW), Netherlands

O36-2 16:50 **Methanogenic Activity under Dry Wet Cycles of Rice Paddy Soil**
Yahai Lu
Peking University, China

O36-3 17:10 **The Genesis and Transport of N2O in Soil**
Peter Quin[1], Annette Cowie[1], Peter Grace[2], Stephen Kimber[3], Lynne Macdonald[4], Iain Young[1] and Lukas Van Zwieten[3]*
[1] University of New England, Australia; [2]Queensland University of Technology, Australia; [3] NSW Department of Primary Industry, Australia; [4]CSIRO, Australia

O36-4 17:30 **Efficiency of Deficit Irrigation to Reduce Soil CO2 Emissions in an Agricultural Soil**
Raul Zornoza*, Jose A. Acosta, Jose Maria De La Rosa, Angel Faz, Rafael Domingo and Alejandro Perez-Pastor
Universidad Politecnica de Cartagena, Spain

O36-5 17:50 **Comparison of Methane Emission Characteristics in Fresh and Composted Cattle Manure Amended Paddy Soil during Rice Cultivation**
Sang Yoon Kim, Prabhat Pramanik, Jessie Gutierrez and Pil Joo Kim*
Gyeongsang National University, Korea

Oral Session No. 37

201 (2F)

[C1.3-1] Weathering and Soil Formation in Response to Environmental Changes

June 10 (Tue), 16:20 - 18:10

Convenor: Gan-Lin Zhang (Chinese Academy of Sciences, China)/ Zbigniew Zagorski (Warsaw University of Life Sciences-SGGW, Poland)

O37-1 16:20 **Coevolution of Soil Genesis and Life**
Curtis Monger*
New Mexico State University, USA

O37-2 16:45 **Soil Biogeochemical Processes in the Critical Zone**
Jon Chorover
University of Arizona, USA

O37-3 17:10 **Shrinking-swelling Soils in Cryogenic Environment**
Irina Kovda[1]*, Sergey Goryachkin[1], Marina Lebedeva[2], Natalia Chizhikova[2], Nimazhap Badmaev[3] and Anatoly Kulikov[3]
[1]Institute of Geography, Russia; [2]Dokuchaev Soil Institute, Russia; [3]Institute of General and Experimental Biology, Russia

O37-4 17:30 **A New Data Base for Including Weathering in Landscape Evolution Modelling**
Rainer Baritz[1], Andreas Guenther[1], Reiner Dohrmann[1], Ruediger Butz-Braun[2] and Michael Bock[3]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Clay Laboratory Kirchhain, Germany; [3]Scilands GmbH, Germany

O37-5 17:50 **Weathering and Soil Formation in Responding to Changing Environment in an Alpine Region of the Qinghai-tibet Plateau**
Gan-Lin Zhang*, De-Cheng Li, Yu-Guo Zhao, Jin-Ling Yang and Feng Liu
Chinese Academy of Sciences, China

Oral Session No. 38

202 (2F)

[C3.5-4] Physical Restoration of Soils

June 10 (Tue), 16:20 - 18:10

Convenor: Asko Simojoki (University of Helsinki, Finnland)/ Rainer Horn (Christian-Albrechts-Universität zu Kiel (CAU), Germany)

O38-1 16:20 **Soil Deformation - How far are Physical, Chemical and Biological Processes and Soil Functions Irreversibly Affected on Various Scales, What are the Consequences for Reamelioration!**
Rainer Horn, Heiner Fleige and Dorte Holthusen
Soil Science, Christian Albrechts University, Germany

O38-2 16:50 **Persistent Effects of Heavy Soil Compaction on the Gas Transport Properties of a Clay Soil**
Asko Simojoki[1]*, Minna Makela[1], Feto Berisso[2], Per Schjønning[2], Kristiina Regina[3] and Laura Alakukku[1]
[1]University of Helsinki, Finland; [2]Aarhus University, Denmark; [3]MTT Agrifood Research Finland, Finland

O38-3 17:10 **Physical Restoration of Compacted Soils: A Lab Experiment using Rock Fragment Addition**
Laura Gargiulo[1]*, Giacomo Mele[1], Bruno Di Matteo[1] and Fabio Terribile[2]
[1]Institute for Agriculture and Forestry in the Mediterranean (ISAFOM), National Research Council (CNR), Italy; [2]University of Naples "Federico II", Italy

O38-4 17:30 **Physical Restoration of Eroded Soils in the Northern Great Plains (NA)**
Tom E. Schumacher[1]*, Sharon K. Papiernik[2], David A. Lobb[3], Javier Mollinedo[1], Rajesh Chintala[1] and Sandeep Kumar[1]
[1]South Dakota State University, USA; [2]USDA-Agricultural Research Service, North Central Agriculture Research Laboratory, USA; [3]University of Manitoba, Canada

O38-5 17:50 **Temporal Variability of Soil Physical Properties under Different Land Use Types of Clay Soil in the Mekong Delta, Vietnam**
Linh Tran Ba[1]*, Titus Ghyselinck[1], Khoa Le Van[2] and Wim Cornelis[1]
[1] Gent University, Belgium; [2] Can Tho University, Viet Nam

Oral Session No. 39

Halla A (3F)

[WG4] New Approaches in Paddy Soil Management for Food Safety and Environmental Quality

June 10 (Tue), 16:20 - 18:30

Convenor: Ho Ando (Yamagata University, Japan)/ Yuan Shen (NCHU, Taiwan)

O39-1 16:20 **Identifying Yield Limiting Soil Factors with Aids of Remote Sensing and Data Mining Techniques**
Yi-Ping Wang and Yuan Shen
NCHU, Taiwan

O39-2 16:50 **Root-zone Fertilization: A Key and Necessary Approach to Improve Fertilizer Use Efficiency and Reduce Non-point Pollution from the Cropland**
Huoyan Wang[1] and Jianmin Zhou[2]

[1] Chinese Academy of Sciences, China; [2]Nanjing Branch of the Chinese Academy of Sciences, China

O39-3 17:10 **A Novel Trial to Combine Use of Azolla and Loach to Suppress Weed Monochoria Vaginalis and Increase Organically Farmed Rice Yield**
Weiguo Cheng*, Miwa Takei, Chizuru Sato, Keitaro Tawaraya and Hironori Yasuda
Yamagata University, Japan

O39-4 17:30 **Decrease in Nitrogen Fertility of Paddy Soils Induced by Paddy Rice and Upland Soybean Rotation**
Mizuhiko Nishida, Koji Yoshida and Hiroyuki Sekiya
NARO Tohoku Agricultural Research Center, Japan

O39-5 17:50 **An Approach to Reduce Arsenic Uptake and Accumulation in Paddy Rice through the Selection of Rice Genotypes with High Iron Plaque Formation Capability**
Dar-Yuan Lee* and Chien-Hui Syu
National Taiwan University, Taiwan

O39-6 18:10 **Resource Conservation Technologies for Improved Rice Water Productivity in Indo-Gangetic Plains of India**
Surinder Kukal*
Punjab Agricultural University, India

Oral Session No. 40

Halla B (3F)

[C1.6] Paleopedology

June 10 (Tue), 16:20 - 18:10

Convenor: Alexander Makeev (Moscow University, Russia)/ Carolyn Olson (USDA-Office of the Chief Economist, USA)

O40-1 16:20 **Regional Erosion Surfaces of the Midwest USA: Clues to Climatic Readjustment from Late Pleistocene Loess and Paleosols (OSI 5e-2)**
Carolyn Olson*, USDA, USA

O40-2 16:40 **Pedosedimentary Sequences on Moscow (late Saalian) till in the Center of the Russian Plain**
Alexander Makeev[1], Pavel Kust[1] and Marina Lebedeva[2]
[1]M.V. Lomonosov Moscow State University, Russia; [2]V.V.Dokuchaev Soil Institute, Russia

O40-3 16:55 **The Morphological and Chemical Properties of Paleosols are used as Proxies for Reconstruction of Multidirectional Paleoenvironmental Conditions in the Late Holocene for the Region Near Caspian Sea**
Olga Khokhlova and Alexander Khokhlov
Russian Academy of Sciences, Russia

O40-4 17:10 **The Establishment of Paleosol Reference Profile to Aid Paleoenvironment Reconstruction of Paleosols Derived from Quaternary Loess: An Example of the Fenghuangshan Profile in Chaoyang, China**
Qiubing Wang, Zhongxiu Sun*, Chunlan Han and Hui Chen
Shenyang Agriculture University, China

O40-5 17:25 **Magnetic Enhancement and Iron Oxides in a Fluvio-lacustrine Sediments Paleosol Sequence in Southern Italy**
Claudio Colombo[1]*, Giuseppe Palumbo[1], Erika Di Irorio[1], Filippo Russo[2], Fabio Terribile[3], Zhaoxia Jiang[4] and Qingsong Liu[4]
[1] University of Molise v. De Sanctis, Italy; [2]Universita degli Studi del Sannio, Italy; [3]Universita degli Studi di Napoli "Federico II"-Via Universita, Italy; [4]Chinese Academy of Sciences, China

O40-6 17:40 **The Applicability of Plant Biomarkers to Reconstruct Palaeo-environments from Plaggic and Driftsand Deposits**
Boris Jansen*, Jan Van Mourik, Frederique Kirkels and Karsten Kalbitz
University of Amsterdam, Netherlands

O40-7 17:55 **A New Method for DNA Extraction from Allophanic Soils and Paleosols on Tephras: Insights in the Search for Ancient DNA from Past Terrestrial Environments**
Yu-Tuan Huang[1]*, Ray Cursons[1], David J. Lowe[1], Heng Zhang[1], G. Jock Churchman[2], Louis A. Schipper[1], Nicolas J. Rawlence[3] and Alan Cooper[2]
[1]University of Waikato, New Zealand; [2]University of Adelaide, Australia; [3]University of Otago, New Zealand

Oral Session No. 41

Samda (3F)

[C4.2-1] Linking Forest Management and Soil Processes to Ecosystem Productivity and Functions

June 10 (Tue), 16:20 - 18:10

Convenor: Zhihong Xu (Griffith University, Australia)

O41-1 16:20 **Is There a Role for Forest Management to Increase Carbon Sequestration and Ecosystem Services?**
Scott X Chang[1]*, Zhihong Xu[2] and Peikun Jiang[3]
[1] University of Alberta, Canada; [2]Griffith University, Australia; [3]Zhejiang A & F University, China

O41-2 16:50 **Forest Restoration Potential using Ecological Site Descriptions**
Travis Nauman[1]*, Jason Teets[2], James Thompson[3], James Bell[2], Henry Liebermann[3] and Aaron Burkholder[3]
[1] West Virginia University,USDA, USA; [2]USDA Natural Resources Conservation Service, USA; [3]West Virginia University, USA

O41-3 17:10 **Carbon Stock Measurement to Evaluate Ecosystem Service from Carbon Sequestration**
Joyce Monteiro[1]*, Helga Hissa[2]*, Mauricio Coelho[1], Ademir Fontana[1], Kenny Fonseca[3], Marcelo Costa[4] and Ana Carolina Goulart[5]
[1] Embrapa Soil, Brazil; [2]SEAPEC, Brazil; [3]University Federal Fluminense (UFF), Brazil; [4]Secretary of agriculture and livestock of Rio de Janeiro State (SEAPEC), Brazil; [5]Federal Rural University of Rio de Janeiro (UFRRJ), Brazil

O41-4 17:30 **Soil Approaches for Intelligence and Evidence in Forensic Case Work**
Lorna Dawson*, The James Hutton Institute, United Kingdom

O41-5 17:50 **Soil Surface Assessment under Plantation Forest in South Sumatra using Landscape Function Analysis Procedure**
Dwi Setyawan*
Sriwijaya University, Indonesia

Oral Session No. 42

401 (4F)

[C1.3-2] Volcanic Soils: Distinctive Properties and Management

June 10 (Tue), 16:20 - 18:10

Convenor: Randy Dahlgren (University of California, USA)/ Masami Nanzyo (Tohoku University, Japan)

O42-1 16:20 **Carbon Stabilization Mechanisms in Volcanic Ash Soils in the Ecuadorian Andes**
Boris Jansen* and Karsten Kalbitz
University of Amsterdam, Netherlands

O42-2 16:50 **Nature of Aggregate Hierarchy and Organo-mineral Associations in an Allophanic Andisol**
Maki Asano* and Rota Wagai
National Institute for Agro-Environmental Sciences, Japan

O42-3 17:10 **Property Changes of Andisols in Response to Long-term Changes of Land Use and Management in Indonesia**
Markus Anda
Indonesian Center for Agricultural Land Resource Research and Development, Indonesia

O42-4 17:30 **P Dynamics in Volcanic Soils - Sorption Reactions and Fertilizer Management**
Masami Nanzyo
Tohoku University, Japan

O42-5 17:50 **Soil Genesis and Mineralogy across a Volcanic Lithosequence in Northern California**
Stewart Wilson*, Jean-Jacques Lambert and Randy Dahlgren
University of California-Davis, USA

19:00~21:00 Special Film Screening Event (Tamna A, 5F)

Oral Session No. 43

Baekrok A+B (1F)

[IDS5] A: Biochar Soil Amendment for Environmental and Agronomic Benefits

June 12 (Thu), 10:10 - 12:40

Convenor: Yong Sik Ok (Kangwon National University, Korea)/ Johannes Lehmann (Cornell University, USA)/ Genxing Pan (Nanjing Agricultural University, China)/ Sophie Minori Uchimiya (USDA-ARS, USA)

O43-1 10:10 **Usda-ars Biochar Research: Targeted Biochar Utilization for Soil Remediation, Climate Change, and Bioenergy Production**
Jeff Novak, USDA-ARS, USA

O43-2 10:30 **Differential Effect of Biochar on the Reduction-induced Mobility and Bioavailability of Arsenate and Chromate**
Nanthi Bolan[1]*, Anitha Kunhikrishnan[2] and Girish Choppala[3]
[1]University of South, Australia; [2]National Academy of Agricultural Science, Korea; [3]Central Queensland University, Australia

O43-3 10:43 **Understanding Biochar Role in Soil Quality and Functioning: Where to Go?**
Genxing Pan, Stephen Joseph, Lianqing Li, Xiaoyu Liu, Rongjun Bian and Jinwei Zheng
Nanjing Agricultural University, China

O43-4 10:56 **Influence of Dissolved Organic and Inorganic Compounds on the Function of Biochar in Amended Soils**
Minori Uchimiya
USDA-ARS Southern Regional Research Center, USA

O43-5 11:09 **Pyrolytic Temperature Affects Sulfamethoxazole Adsorption by Plant-derived Biochars**
Baoshan Xing[1]*, Zhenyu Wang[2], Hao Zheng[2] and Xinghua Su[3]
[1]University of Massachusetts, USA; [2]Ocean University of China, China; [3]Qingdao Biochar Environmental Bioengineering Co, Ltd, China

O43-6 11:22 **Biochar in Zambia, Indonesia, Malaysia and Nepal: Biochar Technologies, Mechanistic Field Trials, and Socio-economic Aspects**
Gerard Cornelissen[1], Sarah Hale[1], Vegard Martinsen[2], Jan Mulder[2] and Magnus Sparrevik[1]
[1]Norwegian Geotechnical Institute, Norway; [2]University of Life Sciences, Norway

O43-7 11:35 **Effect of Biochar Amendment on Greenhouse Emissions from Rice Paddy and Sugarcane Soils in the Subtropical Region of USA**
Changyoon Jeong, Jim Wang and Dustin Harrell
Louisiana State University, USA

O43-8 11:48 **Effect of Bamboo and Rice Straw Biochars on the Bioavailability of Cd, Cu, Pb and Zn in Soils**
Kouping Lu[1], Xing Yang[1], Jiajia Shen[1], Brett Robinson[2], Dan Liu[1] and Hailong Wang[1]*
[1]Zhejiang A & F University, China; [2]Lincoln University, New Zealand

O43-9 12:01 **Groundwater Pollution Potential and Greenhouse Gas Emission from Soils Amended with Different Swine Biochars**
Kyoung S
USDA-ARS, USA

O43-10 12:14 **Evaluation of Biochar as a Medium for Underground Reactive Barrier to Attenuate Chemicals from Agricultural Drainage**
Jaehoon Lee*, Andrew Sherfy, Forbes Walker, Andrea Ludwig, John Buchanan and Neal Eash
University of Tennessee, USA

O43-11 12:27 **Biochar and DCD Effect on Nitrogen Dynamics in Soils Amended with Organic Amendments**
Ramya Thangarajan*, Nanthi S Bolan, Sanchita Mandal and Ravi Naidu
University of South Australia, Australia

Oral Session No. 44

Yeongju A+B (1F)

[IDS11] Nanotechnologies in Environmental Soil Science

June 12 (Thu), 10:10 - 12:40

Convenor: Man Park (Kyungpook National University, Korea)/ Sridhar Komarneni (The Pennsylvania State University, USA)

O44-1 10:10 **Nanoporous Minerals, Nanophases and Nanocomposites in Environmental Soil Science**
Sridhar Komarneni
The Pennsylvania State University, USA

O44-2 10:40 **Release Behaviour of Fullerene Nanoparticles from Soils Amended with Sewage Sludge**
Divina Navarrol, Rai S. Kookana, Mike Mclaughlin and Jason Kirby
CSIRO Land and Water, PMB 2, Australia

O44-3 11:00 **Al and Fe Nanominerals Dominate Organic Carbon Preservation in Soil**
Jian Xiao
Nanjing Agriculture University, China

O44-4 11:20 **Nanoscale Chemical Analyses of Biochar from Ancient Amazonian Anthrosoils**
B. S. Archanjo[1]*, J. R. Araujo[1], A. M. Silva[1], R. B. Capaz[2], E.h. Martins-Ferreira[1], D. L. Baptista[3], N. P. S. Falcao[4], J. Ribeiro-Soares[5], L. G. Cancado[5], A. Jorio[6] and C. A. Achete[7]
[1]National Institute of Metrology, Quality and Technology (Inmetro), Brazil; [2]Universidade Federal do Rio de Janeiro, Brazil; [3]Universidade Federal do Rio Grande do Sul, Brazil; [4]National Institute for Research in Amazonia (INPA), Brazil; [5]Universidade Federal de Minas Gerais, Brazil; [6]ETH Zurich, Switzerland; [7]Universidade Federal do Rio de Janeiro, Brazil

O44-5 11:40 **New Biofilter Media Modified with Nano-engineered Metal-organosilica Hybrid Composites: an Innovative Solution for Remediation of Stormwater Runoff and Prevention of Soil Pollution**
Hanbae Yang[1]* and Paul Edmiston[2]
[1]ABSMaterials, Inc, USA; [2]The College of Wooster, USA

O44-6 12:00 **Bacterial Biofilms (Extracellular Polymeric Substances): Role in Geosorbents Mobility and Reactivity**
Sneha Pradip Narvekar* and Kai Uwe Totsche
Institute of Geosciences, Germany

O44-7 12:20 **Evaluation of Phytotoxicity Effects of Nano Zero-valent Iron (nZVI) on Plants Growth in Soil Culture; Seed Germination, Chlorophyll, Carbohydrates**
Jae-Hwan Kim, Hak-Won Yoon, Chung-Seop Lee, Da-Som Oh and Yoon-Seok Chang*
POSTECH, Korea

Oral Session No. 45

Halla A+B (3F)

[IDS8] Soils, Land Use and Heat

June 12 (Thu), 10:10 - 12:40

Convenor: Wolfgang Burghardt (University of South Australia, Germany)/ Ralph Meissner (Helmholtz Centre for Environmental Research, Germany)

O45-1 10:10 **Soils, Land Use and Heat**
Gerd Wessolek, Bjorn Kluge, Thomas Nehls, Andre Peters and Steffen Trinks
Berlin University of Technology, Germany

O45-2 10:40 **On the Relation between Soils and Climate**
Alfred Hartemink
University of Wisconsin - Madison, USA

O45-3 11:00 **Numerical Modeling of Vadose Zone Processes using Hydrus and its Specialized Modules**
Jirka Simunek[1]*, Miroslav Sejna[2], Diederik Jacques[3], Guenter Langergraber[4], Scott A. Bradford[5] and M. Th. Van Genuchten[6]
[1]University of California Riverside, USA; [2]PC Progress, Czech Republic; [3]Belgian Nuclear Research Institute, Belgium; [4]University of Natural Resources and Life Sciences, Vienna (BOKU University), Austria; [5]US Salinity Laboratory, USDA, ARS, USA; [6]Federal University of Rio de Janeiro, Brazil

O45-4 11:20 **Monitoring and Mathematical Modeling of Water and Thermal Regime of Urban Soil Influenced by Various Surface Covers**
Radka Kodesova[1]*, Miroslav Fer[1], Antonin Nikodem[1], Ales Klement[1], Pavel Neuberger[1] and Petr Bures[2]
[1]Czech University of Life Sciences Prague, Czech Republic; [2]VESKOM, Ltd, Czech Republic

O45-5 11:40 **A New Technology to Secure a Congruent Temperature Regime inside the Lysimeter Vessel and the Surrounding Soil**
Sascha Reth[1], Katja Richter[1]*, Ralph Meißner[2], Jozef Gubis[3] and Ivan Matusek[4]
[1]Umwelt-Gerate-Technik GmbH, Germany; [2]HELMHOLTZ Centre for Environmental Research, Germany; [3]Agrosystems PS Piestany , PPRI, Slovakia; [4]EKOSUR, Slovakia

O45-6 12:00 **Long Term Trends in Some Australian Soil Temperature Records**
John Knight[1]*, Budiman Minasny[1], Alex Mcbratney[1], Terry Koen[2] and Brian Murphy[2]
[1]The University of Sydney, Australia; [2]Office of Environment and Heritage, Australia

O45-7 12:20 **Quantifying Small-scale Variability in Water Storage and Root Water Uptake on the Edwards Plateau, Texas**
Ieyasu Tokumoto
Saga University, Japan

Oral Session No. 46

Samda (3F)

[IDS3] Soil Information and Food Security

June 12 (Thu), 10:10 - 12:40

Convenor: Pavel Krasilnikov (Moscow State University, Russia)/ Suk Young Hong (Rural Development Administration-RDA, Korea)

O46-1 10:10 **Healthy Soils and Soil Information: A Prerequisite for Sustainable Food Production**
Moujahed Achouri
Food and Agriculture Organization of the United Nations, Tunisia

O46-2 10:40 **Global Soil Carbon Assessment**
Jose Padarian, Uta Stockmann, Budiman Minasny and Alex Mcbratney*
The University of Sydney, Australia

O46-3 11:00 **The Good, the Bad and the Ugly - Experiences from Trying to Establish Soil Monitoring Networks within the UK**
Helaina Black*
The James Hutton Institute, United Kingdom

O46-4 11:20 **Soil Health in Southern Africa and Implication on Sustainable Intensification: How much is the Gap?**
Lulseged Tamene[1]*, Andrew Sila[2], Job Kihara[1], Gift Ndengu[1], Powell Mponela[1], Keith Shepherd[2], Markus Walsh[3] and Deborah Bossio[1]
[1]International Center for Tropical Agriculture (CIAT), Malawi; [2]Agroforestry Center (ICRAF), Kenya; [3]Africa Soil Information Service (AfSIS), Tanzania

O46-5 11:40 **Variability of Top Soil Saturated Hydraulic Conductivity (kfs) Affected by Mixed Land Use on Two Volcanic Environments in Central Mexico**
Mario Guevara[1]*, Alberto Gomez-Tagle Chavez[2], Alberto Gomez-Tagle Rojas[2], Miguel Equhua[3], Julian Equhua[4] and Carlos Arroyo[1]
[1] CONABIO, Mexico; [2]Michoacan State University San Nicolas de Hidalgo, Mexico; [3]Institute of Ecology A. C, Mexico; [4]Research Center for Geography and Geomatics Ing. Jorge L. Tamayo, Mexico

O46-6 12:00 **Spatial Landuse Planning of Soybean Plantation as Analyzed by Land Evaluation and Dynamic System: a Case Study of Karawang Regency, West Java, Indonesia**
Widiatmaka Widiatmaka[1], Wiwin Ambarwulan[2], Irman Firmansyah[1] and Khursatul Munibah[1]
[1] Bogor Agricultural University, Indonesia; [2]Geospatial Information Agency, Indonesia

O46-7 12:20 **Werise: a Farmer-friendly Decision Support Tool for Climate Change Adaptation in Rainfed Rice Areas**
Keiichi Hayashi[1]*, Anita Boling[1], Tsutomu Ishimaru[1], Benjamin Samson[2], Zulkifli Zaini[3] and David E. Johnson[1]
[1]International Rice Research Institute, Philippines; [2] International Rice Research Institute, Laos; [3] International Rice Research Institute, Indonesia

12:40- 13:40 Lunch (Tamna B)

Oral Session No. 47

Baekrok A (1F)

[WG9] Steps made toward a Universal Soil Classification

June 12 (Thu), 13:40 - 15:30

Convenor: Jonathan Hempel (Universal Soil Classification System Working Group, Hungary)/ Erika Michéli (Szent Istvan University, Hungary)

O47-1 13:40 **Towards a Universal Soil Classification System**
Jonathan Hempel[1]*, Erika Micheli[2], Phillip Owens[3] and Alex Mcbratney[4]
[1] Natural Resources Conservation Service, USA; [2] Szent Istvan University, Hungary; [3] Purdue University, USA; [4]University of Sydney, Australia

O47-2 14:10 **Approaches to Define the Elements of a Universal Soil Classification System**
Erika Micheli[1]*, Vince Lang[1], Phillip Owens[2], Jon Hempel[3] and Alex Mcbratney[4]
[1] Szent Istvan University, Hungary; [2] Purdue University, USA; [3] USDA NRCS, USA; [4] University of Sydney, Australia

O47-3 14:30 **Toward a Global System of Soil Horizon Nomenclature**
Curtis Monger[1]*, Lucia Helena C. Anjos[2], Ganlin Zhang[3], Sergey Goryachkin[4], Ben Harms[5], Peter Schad[6], Catherine Fox[7] and Sonn Yeon-Kyu[8]
[1] New Mexico State University, USA; [2]UFRRJ, Brazil; [3] Chinese Academy of Sciences, China; [4]Russian Academy of Sciences, Russia; [5] IT, Innovation and the Arts, Australia; [6] Technische Universitat, Germany; [7]Agriculture and Agri-Food Canada, Canada; [8]NAAS, Korea

O47-4 14:50 **Cold Soils in Universal Soil Classification**
Sergey Goryachkin*
Russian Academy of Sciences, Russia

O47-5 15:10 **Creating Numerical Horizon Classes For The USA**
Philip Hughes[1]*, Alex Mcbratney[1], Budiman Minasny[1] and Jon Hempel[2]
[1]University of Sydney, Australia; [2]USDA Lincoln, USA

Oral Session No. 48

Baekrok B (1F)

[C2.3-2] A: Life in Soils - Distribution and Function of Soil Microorganisms in a Changing Environment

June 12 (Thu), 13:40 - 15:30

Convenor: Ellen Kandeler (University of Hohenheim, Germany)

O48-1 13:40 **The Moisture Response of Soil Microorganisms: Old Topic, Present Challenges and New Approaches**
Claire Chenu[1]*, Fernando Moyano[2], Naoise Nunan[2], Ruth Falconer[3], Patricia Garnier[4], Olivier Monga[5], Wilfred Otten[3], Valerie Pot[4] and Xavier Raynaud[6]
[1] AgroParisTech, France; [2]CNRS, France; [3]University of Abertay, United Kingdom; [4] INRA, France; [5] IRD, Cameroon; [6]UPMC, France

O48-2 14:10 **X-Ray Tomography and in Situ Detection Technique used to Quantify Spatial Distribution of Bacteria in Soil**
Archana Juyal[1], Thilo Eickhorst[2], Philippe Baveye[3]*, Ruth Falconer[1] and Wilfred Otten[1]
[1] University of Abertay Dundee, United Kingdom; [2] University of Bremen, Germany; [3] Rensselaer Polytechnic Institute, USA

O48-3 14:30 **The Microbial Landscape Iin Soils - Biogeography of Soil Microorganisms at Different Scales**
Ellen Kandeler[1], Runa Boeddinghaus[1], Kathleen Regan[1], Franziska Ditterich[1], Sven Marhan[1], Christian Poll[1] and Naoise Nunan[2]
[1]University of Hohenheim, Germany; [2]CNRS, France

O48-4 14:50 **Soil Habitat Structure and Crop Management Influence Functional Diversity and Activity of Soil Microbiota**
Vadakattu Gupta[1], Lara Vallejo Roosdorp[2], Ross Chapman[3], Alan Mckay[4] and Rick Llewellyn[1]
[1] CSIRO, Australia; [2] Wageningen University, Netherlands; [3]Ecogeonomix, Australia; [4]SARDI, Australia

O48-5 15:10 **Processes and Filters Shaping Soil Microbial Diversity Assessed by High throughput Sequencing**
Sebastien Terrat[1], Samuel Dequiedt[1], Melanie Lelievre[1], Virginie Nowak[1], Patrick Wincker[2], Corinne Cruaud[2], Nicolas Saby[3], Claudy Jolivet[3], Dominique Arrouays[3], Pierre-Alain Maron[4], Lionel Ranjard[4] and Nicolas Chemidlin Prevost-Boure[4]*
[1]INRA-Universite Bourgogne, France; [2]Commissariat a l'Energie Antomique (CEA), Institut de Genomique (IG), Genoscope, France; [3]INRA, France; [4]INRA-Universite Bourgogne, AgroSup Dijon, France

Oral Session No. 49

Yeongju A (1F)

[C2.2-2] A: Soil Organic Carbon: Dynamics, Stabilization, and Environmental Implications

June 12 (Thu), 13:40 - 15:30

Convenor: Ingrid Kögel-Knabner (Technische Universitaet Muenchen, Germany)/ Bas van Wesemael (Universitécatholique de Louvain, Belgium)

O49-1 13:40 **Plant Residue Decay in Diverse Canadian Soils**
Ed Gregorich, Ben Ellert, Henry Janzen and Bobbi Helgason
Agriculture and Agri-Food Canada, Canada

O49-2 14:10 **Physical Protection of Soil Organic C in Soil Aggregates: LTA Approach**
Luigi P. D'acqui[1]*, Alessandra Bonetti[1], Roberto Pini[1] and Giacomo Certini[2]
[1]Consiglio Nazionale delle Ricerche - CNR, Italy; [2]Universita di Firenze, Italy

O49-3 14:30 **Impact of Time and Land Use on Vertical Carbon Distribution and Soil Structure in Chernozems of Central Europe**
Georg J. Lair[1]*, Jasmin Schiefer[1], Eva Maria Wild[2], Markus Steffens[3] and Winfried Blum[1]
[1]University of Natural Resources and Life Sciences, Austria; [2]University of Vienna, Austria; [3]Life Sciences Centre of Technical University Munich, Germany

O49-4 14:50 **Fate of Biochar in Chemically- and Physically-defined Soil Organic Carbon Pools**
H.m. Saman K. Herath[1], Marta-Camps Arbestain[2], Mike Hedley[2], Joeri Kaal[3] and Robert Van Hale[4]
[1]Uva Wellassa University, Sri Lanka; [2]Massey University, New Zealand; [3]Consejo Superior de Investigaciones Cientificas (CSIC), Spain; [4]University of Otago, New Zealand

O49-5 15:10 **δ13c Values of Aggregates and Density Fractions Reflect Carbon Fluxes During Soil Organic Matter Formation**
Anna Gunina[1]* and Yakov Kuzyakov[2]
[1]Friedrich-Schiller-University of Jena, Moscow Lomonosov State University, Germany; [2]Georg-August-University of Gottingen, Germany

Oral Session No. 50

Yeongju B (1F)

[C3.3-2] Advances in Rhizosphere Regulation and Soil Nutrient Management

June 12 (Thu), 13:40 - 15:30

Convenor: Jianbo Shen (China Agricultural University, China)/ Caixian Tang (La Trobe University, Australia)

O50-1 13:40 **Rhizosphere Management in Intensive Crop Production Systems of China**
Fusuo Zhang*, Jianbo Shen and Haigang Li
China Agricultural University, China

O50-2 14:10 **Phosphorus is Temporally Immobilized in the Rhizosphere of Crop Plants under Elevated CO2**
Jian Jin[1], Caixian Tang[1]*, Roger Armstrong[2] and Peter Sale[1]
[1]La Trobe University, Melbourne Campus, Australia; [2]Department of Primary Industries, Australia

O50-3 14:30 **Turnover and Losses of Phosphorus in Swedish Agricultural Soils: Long-term Changes, Leaching Trends and Mitigations Measures**
Lars Bergstrom*, Holger Kirchmann, Gunnar Borjesson, Helena Andersson, Katarina Kyllmar, Pia Kynkaanniemi, Jian Liu and Annika Svanback
Swedish University of Agricultural Sciences, Sweden

O50-4 14:50 **25 Years of Research on Biological Nitrification Inhibition (BNI) by Grass and Trees from the Rhizosphere to Landscape in Savannas of West Africa: New Insights for Enhanced NUE and Soil Fertility**
Jean-Christophe Lata[1]*, Sebastien Barot[2], Simon Boudsocq[3], Xavier Raynaud[1], Lambienou Ye[4] and Luc Abbadie[1]
[1]UPMC, France; [2]IRD, France; [3]UMR Eco&Sols - INRA - Montpellier, France; [4]Universite Polytechnique de Bobo-Dioulasso, Burkina Faso

O50-5 15:10 **Mechanisms of Fast Above-belowground Coupling of C Cycle: Pressure Concentration Waves Vs. Direct Assimilate Transport**
Olga Gavrichkova[1]* and Yakov Kuzyakov[2]
[1]National Research Council, Italy; [2]University of Gottingen, Germany

Oral Session No. 51

201 (2F)

[C3.6-2] Salinity Management when Irrigating with Marginal Quality Waters

June 12 (Thu), 13:40 - 15:30

Convenor: Tibor Tóth (Centre for Agricultural Research of the Hungarian Academy of Sciences, Hungary)/ John Triantafilis (The University of New South Wales, Australia)

O51-1 13:40 **Acacia Species for the Rehabilitation and Utilization of Salt-affected Lands and Waters**
Muhammad Saqib[1]*, Ghulam Abbas[1], Javaid Akhtar[1] and Muhammad Kashif Ali[2]
[1]University of Agriculture Faisalabad, Pakistan; [2]National Engineering Services of Pakistan, Pakistan

O51-2 14:10 **Understanding Clay Mineralogy and Net Negative Charge in Relation to Soil Specific Threshold Electrolyte Concentrations**
John Bennett, Alla Marchuk, Serhiy Marchuk and Steven Raine
University of Southern Queensland, Australia

O51-3 14:30 **Theory Put into Practice: Amending Water High in Alkalinity and Sodium within the Soil Profile**
Brigid Mckenna[1], Peter Kopittke[1], Neal Menzies[1], David Macfarlane[2] and Scott Dalzell[2]
[1]The University of Queensland, Australia; [2]Santos, Australia

O51-4 14:50 **Impact Study on the Application of Vinasse to Cambisol and Vertic Luvisol in Ethiopia**
Frederic Feder[1]* and Julie Sansoulet[2]
[1]CIRAD,UPR < recyclage et risque >, LMI IE SOL, Senegal; [2]Unite Mixte Internationale Takuvik, CNRS et Universite Laval, Quebec, Canada

Oral Session No. 52

202 (2F)

[C2.1-1] Quantifying Evaporative Fluxes from Terrestrial Surfaces

June 12 (Thu), 13:40 - 15:30

Convenor: Dani Or (ETH Zurich, Switzerland)/ Scott Jones (Utah State University, USA)

O52-1 13:40 **A Heat Pulse Probe Array for Subsurface Soil Evaporation Estimates**
Kashifa Rumana[1], Markus Tuller[2] and Scott Jones[1]
[1]Utah State University Logan, USA; [2]The University of Arizona, USA

O52-2 14:10 **Quantifying Evaporation from a Bare Soil Surface using an Open Top Chamber**
Thomas Baumgartl[1]*, Anne Schneider[2] and Sven Arnold[1]
[1]The University of Queensland, Australia; [2]Palaris, Australia

O52-3 14:30 **Estimation of Soil Evaporation by Aerodynamic-profile Method used with Various α and β Formulations**
Abdulaziz Alharbi, Qassim university, Saudi Arabia

O52-4 14:50 **Predicting Water Retention Curve from Two Point Measurement**
Asim Biswas[1]* and Hamish Cresswell[2]
[1]McGill University, Canada; [2]Commonwealth Scientific and Industrial Research Organisation, Australia

O52-5 15:10 **Partitioning of Evaporation and Transpiration in Arid Shrublands**
Jianting Zhu[1]* and Dongmin Sun[2]
[1]University of Wyoming, USA; [2]University of Houston - Clear Lake, USA

Oral Session No. 53

Halla A (3F)

[C4.4-1] Education and Social Awareness for Soil Science in General Public

June 12 (Thu), 13:40 - 15:30

Convenor: Teruo Higashi (University of Tsukuba, Japan)/ Jin-Ho Lee (Chonbuk National University, Korea)

O53-1 13:40 **Supply and Demand: What Australian Soil Science Students Get and What Australian Employers of Soil Scientists Want**
Damien Field*, Stephen Cattle and Laura Phelps
The University of Sydney, Australia

O53-2 14:10 **Soil and Soil Science Education in the Compulsory and Vocational Education through Korean Textbooks**
Yeong-Sang Jung[1]*, Jin-Ho Joo[1] and Eui-Do Lee[2]
[1]Kangwon National University, Korea; [2]Chuncheon National University of Education, Korea

O53-3 14:30 **Expanding the Horizons of Soil Science to the Public**
David Lindbo[1]* and Jan Hopmans[2]
[1]North Carolina State University and Soil Science Society of America, USA; [2]University of California, Davis and Soil Science Society of America, USA

O53-4 14:50 **Monitoring Soil Science Program for Schools**
Lynette Abbott[1]*, Robert Fitzpatrick[1], Cameron Gardner[2] and Warwick Matthews[2]
[1]The University of Western Australia, Australia; [2]Shenton College, Australia

O53-5 15:10 **A Global Soil Monolith Collection for Education and Advocacy on Soils of the World**
Stephan Mantel
ISRIC World Soil Information, Netherlands

Oral Session No. 54

Halla B (3F)

[WG3] Understanding Acid Sulfate Soils: The Key to Their Proper Management

June 12 (Thu), 13:40 - 15:30

Convenor: Peter Österholm(AboAkademi University , Finland)/ Leigh Sullivan (Southern Cross University, Australia)

O54-1 13:40 **Characteristics of an Abandoned Peat Mining Area Underlain by a Sulfidic Subsoil**
Jaakko Makela and Markku Yli-Halla*
University of Helsinki, Finland

O54-2 14:10 **Formation of Inland Saline Acid Sulfate Soils in the Saloum Region, Senegal**
Aidara Lamine Fall[1] and Jean-Pierre Montoroi[2]*
[1]University Assane Seck of Ziguinchor, Senegal; [2]IRD, France

O54-3 14:30 **Increasing Rice Production on Soils Developed from Pyritized Coastal Sediments in the Malay Peninsula**
Jusop Shamshuddin, Mohd Sufian Kang Enio, Azura Azman Elisa, Alia Jamaludin Farhana, Che Ishak Fauziah and Qurban Ali Panhwar
Universiti Putra Malaysia, Malaysia

O54-4 14:50 **Stable Sulfur Isotopes in Acid Sulfate Soils: Baseline Studies for Se Australia**
Crystal Maher* and Leigh Sullivan
Southern Cross GeoScience, Australia

O54-5 15:10 **Subsurface Chemigation of Acid Sulfate Soils - a New Approach to Mitigate Acid and Metal Leaching**
Sten Engblom[1]*, Pekka Sten[2], Peter Osterholm[3], Rainer Rosendahl[4] and Kjell-Erik Lall[5]
[1]Novia University of Applied Sciences, Finland; [2]Vaasa University of Applied Sciences, Finland; [3]Abo Akademi University, Finland; [4]ProAgria Rural Advisory Centre of Ostrobothnia, Finland; [5]YA! Vocational Education and Training, Finland

Oral Session No. 55

Samda (3F)

[WG10] Cryosols on a Changing Planet: Properties, Processes, Regimes and Functions

June 12 (Thu), 13:40 - 15:30

Convenor: Megan Balks (University of Waikato, New Zealand)/ Hee-Myong Ro (Seoul National University, Korea)

O55-1 13:40 **Hot Issues in Cryosol Research**
Dmitry Konyushkov*
V.V. Dokuchaev Soil Science Institute, Russia

O55-2 14:10 **Characterization, Classification and Distribution of Soils from the South Shetlands Archipelago, Antarctica**
Felipe Nogueira Bello Simas[1]*, Carlos Ernesto Goncalves Reynaud Schaefer[1], Roberto Ferreira Machado Michel[2] and Marcio Rocha Francelino[1]
[1]Universidade Federal de Vicosa, Brazil; [2]Universidade Estadual de Santa Cruz, Brazil

O55-3 14:30 **Some Results of the Soil Cover Research in the Permafrost Area (West Siberia)**
Victor Valdayskikh, Olga Nekrasova, Anton Uchaev and Tatiana Radchenko
Ural Federal University, Russia

O55-4 14:50 **A Mechanism for Polygon Evolution on Hill Slopes in Taylor Valley, Antarctica; Evidence from Osl Dating and Micromorphology of a Typic Haploturbel**
Carol Smith[1]*, Peter Almond[1], Fiona Shanhun[1], Andre Eger[1], Jim Bockheim[2], James Feathers[3], Victoria Nall[1] and Rachel Downward[1]
[1]Lincoln University, New Zealand; [2]University of Wisconsin, USA; [3]University of Washington, USA

O55-5 15:10 **Effects of Nitrogen Addition on Soil Carbon Dynamics in the Active Layer of an Arctic Tundra Soil during Repeated Freeze-thaw Cycles**
Min-Jin Lee and Hee-Myong Ro*
Seoul National University, Korea

Oral Session No. 56

401 (4F)

[WG7] Agricultural Land Management for Improving Soil Fertility and Irrigation Efficiency

June 12 (Thu), 09:00 - 18:00

Convenor: Yoo-Hak Kim (National Academy of Agricultural Science, RDA, Korea)

09:00 Introduction

09:45 Break

10:00 Bangladesh, Cambodia, Indonesia, Laos

Agricultural Land Management for Improving Soil Fertility and Irrigation Efficiency
Md. Baktear Hossain, Principal Scientific Officer (Soils), Natural Resources Management Division, Bangladesh Agricultural Research Council, Bangladesh

Sustainable Use and Management of Organic and Inorganic Fertilizers for Improving Rice Productivity in Cambodia
Sovuthy Pheav, Director, Department of Agricultural Land Resources Management, Ministry of Agriculture, Forestry and Fisheries, Cambodia

Improving Soil Fertility to Increase Rice Production through Promoting the Integrated Plant Nutrient Management Technology in Indonesia
Sri Rochayati, Senior Researcher, Indonesian Soil Research Institute, Indonesian Agency for Agricultural Research and Development, Ministry of Agriculture, Indonesia

A Study of Organic and Inorganic Nutrient Input Options for Low Land Rice Cropping in Lao PDR
Khonepany Dounphady, Deputy Director, Agricultural Land Management and Conservation Center, Department of Agriculture Land Management, Ministry of Agriculture and Forestry, Laos

11:50 Lunch

13:30 Mongolia, Nepal, Philippines, Sri Lanka

Agriculture Land Management for Improving Soil Fertility and Irrigation Efficiency in Mongolia
Bayarsaikhan Altangerel, Officer, Department of Crop Production Policy, Implementation and Coordination, Ministry of Industry and Agriculture, Mongolia

Water and Nutrient Management Study in Rice-Tomato Cropping System in Nepal
Surendra Prasad Srivastava, Senior Scientist/Chief, Soil Science Division, National Agriculture Research Institute, Nepal Agriculture Research Council, Nepal

Agricultural Land Management for Improving Soil Fertility in the Philippines
Florentino Monsalud, Director, Agricultural Systems Cluster, University of the Philippines Lao Banos, Philippines

Agricultural Land Management for Improving Soil Fertility and Irrigation Efficiency in Agro-Well Based Small Holder Farms in Sri Lanka
Konara Mudiyanselage Abhaya Kendaragama, Research Officer, Department of Agriculture, Ministry of Agriculture, Sri Lanka

15:20 Break

15:30 Thailand, Vietnam, Korea

Integrated Use of Fertilizers to Improve Sugarcane Productivity in Thailand
Bhavana Likhananont, Senior Expert, Agricultural Production Science Research and Development Office, Department of Agriculture, Thailand

Fertilizer Management for Improving Rice Production and Soil Fertility in Northern Mountainous and Hilly Region of Vietnam
Rinh Pham Dinh, Researcher, Department of Soil Analysis Centre, Soils and Fertilizers Research Institute, Ministry of Agriculture and Rural Development, Vietnam

Limiting Factors for Improving Soil Fertility in Asian Countries
Yoo-Hak Kim, Senior Researcher, Division of Soil and Fertilizer, National Institute of Agricultural Science, RDA, Korea

17:00 Discussion

Oral Session No. 57

402 (4F)

[C1.2-2] Soil Data, Spatial information Systems and Interpretation Procedures

June 12 (Thu), 13:40 - 15:30

Convenor: Karl Stahr (Hohenheim University, Germany)/ Curtis Monger (New Mexico State University, USA)

O57-1 13:40 **Mapping Soil Microbial Diversity: A First Approximation**
Elisabeth Bui
CSIRO, Australia

O57-2 14:10 **Central-european Digital Soil Database - The e-SOTER Methodology**
Endre Dobos[1]*, Erika Micheli[2] and Laszlo Pasztor[3]
[1]University of Miskolc, Hungary; [2]Szent Istvan University, Hungary; [3]Hungarian Academy of Sciences, Hungary

O57-3 14:30 **Comparing Different Approaches - Data Mining, Geostatistic, and Deterministic Pedology - to Assess the Frequency of WRB Reference Soil Groups in the Italian Soil Regions**
Romina Lorenzetti*, Roberto Barbetti, Maria Fantappie', Giovanni L'abate and Edoardo A.c. Costantini
Consiglio per la ricerca e la sperimentazione in agricoltura, Italy

O57-4 14:50 **Towards a New International Typological Data Base - Data Integration and Validation**
Rainer Baritz[1], Josef Kozak[2], Michael Bock[3], Ulrich Schuler[4] and Enrico Pickert[5]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Czech University of Life Sciences Prague, Czech Republic [3]Scilands GmbH, Germany; [4]ifu Institute for Environmental Observation, Germany; [5]Saxonian Agency for Environment, Agriculture and Geology (LfULG), Germany

O57-5 15:10 **Spatial Variability of Electrical Conductivity of Salt-Affected Soils in Northeast Thailand**
Porntip Phontusang[1], Roengsak Katawatin[2]*, Krirk Pannangpetch[1], Sununtha Kingpaiboon[1] and Rattana Lerdsuwansri[3]
[1] Khon Kaen University, Thailand; [2] Groundwater Research Center, Khon Kaen University, Thailand; [3] Thammasat University, Thailand

O57-6 *(Not Presented)* **Hydrophysical Database for Brazilian Soils: Challenges and Perspectives**
Marta Ottoni[1]*, Maria Leonor Lopes Assad[2] and Otto Correa Rotunno Filho[3]
[1] Department of Hydrology, Geological Survey of Brazil, Brazil; [2] Federal University of Sao Carlos, Brazil; [3] Federal University of Rio de Janeiro, Alberto Luiz Coimbra Institute, Brazil

15:30~16:20 **Cofee Break & Poster Session 3 (3F, 5F Lobby)**

Oral Session No. 58

Baekrok A (1F)

[WG2] WRB - Lessons Learned from the Development of the Third Edition 2014

June 12 (Thu), 16:20 - 18:10

Convenor: Cornie van Huyssteen (University of the Free State, South Africa)/ Peter Schad (Technische Universität München, Germany)

O58-1 16:20 **Presenting the 3rd Edition of WRB**
Peter Schad[1], Cornie Van Huyssteen[2] and Erika Micheli[3]
[1]Universitaet Muenchen, Germany; [2]University of the Free State, South Africa; [3]Szent Istvan University, Hungary

O58-2 16:40 **The Application of Wrb by the European Commission: Experiences and Future Perspectives**
Luca Montanarella* and Arwyn Jones
European Commission, Italy

O58-3 16:55 **WRB and the Australian Soils Experience**
Ben Harms[1], David Rees[2] and David Morand[3]
[1]DSITIA, Australia; [2]Agriculture Group, Australia; [3]Office of Environment and Heritage, Australia

O58-4 17:10 **A New Diagnostic Horizon in WRB for Anthropic Topsoils in Amazonian Dark Earths (South America)**
Lucia Helena Anjos[1]*, W.g. Teixeira[2], P. Schad[3] and A. Fontana[2]
[1]UFRRJ, Brazil; [2]Embrapa soils, Brazil; [3]Technische Universitaet Muenchen, Brazil

O58-5 17:25 **Classification of Technogenic Soils in WRB in the Light of Polish Experiences**
Przemyslaw Charzynski[1]*, Renata Bednarek[1], Andrzej Greinert[2], Piotr Hulisz[1] and Lukasz Uzarowicz[3]
[1] Nicolaus Copernicus University, Poland; [2]University of Zielona Gora, Poland; [3]Warsaw University of Life Sciences - SGGW, Poland

O58-6 17:40 **Conceptual Development of WRB 2014 and Its Impact on the Third Soils Cartography Series in Mexico**
Carlos Omar Cruz Gaistardo*
Instituto Nacional de Estadistica y Geografia, Mexico

O58-7 17:55 **Software Tool for Deriving WRB Soil Names from National Soil Data - Potential for Further Development of WRB**
Einar Eberhardt[1] and Peter Schad[2]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Technische Universitat Munchen, Germany

Oral Session No. 59

Baekrok B (1F)

[C2.3-2] B: Life in Soils - Distribution and Function of Soil Microorganisms in a Changing Environment

June 12 (Thu), 16:20 - 18:10

Convenor: Ellen Kandeler (University of Hohenheim, Germany)

O59-1 16:20 **The Survival Strategy of the Soil Microbial Biomass**
Philip Brookes[1]*, Sarah Kemmitt[2] and Jianming Xu[1]
[1]Zhejiang University, China; [2] Rothamsted Research, United Kingdom

O59-2 16:50 **Niche Specialisation and Differentiation of Archaeal and Bacterial Ammonia-oxidisers across Agricultural Soils in Southern Hemisphere**
Sasha Jenkins, Daniel Murphy, Ian Waite and Anthony O'donnell
The University of Western Australia, Australia

O59-3 17:10 **Exoenzyme Activities across the Soil Micro-landscape: Spatial Distribution, Stoichiometry and Ecosystem Function**
Haryun Kim[1], Naoise Nunan[2]*, Dechesne Arnaud[3] and Genevieve Grundmann[4]
[1] Pohang University of Science and Technology, Korea; [2] CNRS, France; [3]Technical University of Denmark, Denmark; [4]Universite Claude Bernard Lyon 1, France

O59-4 17:30 **Water Flow Drives Small Scale Biogeography of Substrates and Soil Microorganisms-a Microcosm Study using 2,4-D as a Model Compound**
Marc Pinheiro[1], Franzisca Ditterich[2], Holger Pagel[2], Christian Poll[2], Patricia Garnier[1], Thilo Streck[2], Ellen Kandeler[2] and Laure Vieuble Gonod[1]*
[1]INRA-AgroParisTech, France; [2]University of Hohenheim, Germany

O59-5 17:50 **Are Microbial Habitat Conditions or Microbial Communities the Main Drivers of Soil Organic Matter Decomposition ?**

Sabrina Juarez[1], Naoise Nunan[2*], Valerie Pouteau[3], Thomas Lerch[4] and Claire Chenu[1]
[1] AgroParisTech, France; [2] CNRS, France; [3] INRA, France; [4] Universite de Creteil, France

Oral Session No. 60

Yeongju A (1F)

[C2.2-2] B: Soil Organic Carbon: Dynamics, Stabilization, and Environmental Implications

June 12 (Thu), 16:20 - 18:10

Convenor: Ingrid Kögel-Knabner (Technische Universitaet Muenchen, Germany)/ Bas van Wesemael (Universitécatholique de Louvain, Belgium)

O60-1 16:20 **A Soil-glomalin Map of France: Are Levels of Soil Protein Related to Land Use or Soil Properties?**
Siobhan Staunton[1*], Priscila Jorge-Araujo[2], Herve Quiquampoix[1], Nicolas Saby[3], Claudy Jolivet[3] and Dominique Arrouays[3]
[1] INRA-Eco&Sols- Montpellier, France; [2] INRA-Eco&Sols-Montpellier, CNPq, Brazil; [3] INRA-Infosol, France

O60-2 16:50 **How Do Microbial Metabolism and New Microbial Legacy Mediate Soil Carbon and Nitrogen Cycling?**
Xudong Zhang[1*], Hongbo He[1*], Yeye Wu[1] and Wei Zhang[2]
[1] Chinese Academy of Sciences, China; [2]National Field Research Station of Shenyang Agricultural Ecosystems, China

O60-3 17:10 **Uncertainty in Modelling of Soil Organic Carbon Dynamics Caused by Model Calibration Against Variable Observational Data**
Zhongkui Luo* and Enli Wang
CSIRO Land and Water, Australia

O60-4 17:30 **Investigation of the Degradation of 13C-Labeled Fungal Biomass in Soil - Fate of Carbon in a Soil Bioreactor System**
Michael Schweigert, Thomas Fester*, Anja Miltner* and Matthias Kaestner*
Helmholtz Centre for Environmental Research, Germany

O60-5 17:50 **Modern Approaches to the Isolation and Characterisation of Soil Humin**
Michael H. B. Hayes[1] and Roger S Swift[2*]
[1] University of Limerick, Ireland; [2] University of Queensland, Australia

Oral Session No. 61

Yeongju B (1F)

[C3.5-3] Management and Reclamation of Mining Site Soils

June 12 (Thu), 16:20 - 18:10

Convenor: Jaume Bech (University of Barcelona, Spain)/ Maria Manuela Abreu(Technical University of Lisbon, Portugal)/ Hyo-Taek Chon (Seoul National University, Korea)

O61-1 16:20 **Capacity of Tamarix Africana Poiret to Colonize Contaminated Estuarine Sediments by Former Steel Industry Activities. Microcosm Assays**
Sara Peres[1], Maria Manuela Abreu[1*], Erika Santos[1] and Maria Clara F. Magalhaes[2]
[1]Universidade de Lisboa, Portugal; [2]Universidade de Aveiro, Portugal

O61-2 16:40 **Long-term Effects of Compost Additionsl to Metal Contaminated Soils: Soil Chemical Parameters, Function of Microbes, and Avoidance Response of Earthworms**
Vindhya Gudichuttu[1], Garu Pierzynski[1], Ganga Hettiarachchi[1] and Lucas Bake[r2]
[1]Kansas State University, USA; [2]Brookside Laboratories, USA

O61-3 16:55 **Punakaiki Coastal Restoration Project: a Case Study for a Consultative and Multidisciplinary Approach in Selecting Indicators of Restoration Success for a Sands Mining Closure Site, West Coast, New Zealand**
Carol Smith[1*], Jason Hahner[1], Mike Bowie[1], Stephane Boyer[1], Nick Dickinson[1], Stuart Rhodes[2] and Dave Sharp[3]
[1]Lincoln University, New Zealand; [2]Rio Tinto, Australia; [3]Conservation Volunteers (New Zealand) Ltd, New Zealand

O61-4 17:10 **Spatial Distribution and Bioaccessibility of Lead in Soil in the Urban Area of Broken Hill, New South Wales, Australia as Affected by Dust Deposition and Remedial Works with Cracker Dust**
Kai Yang* and Stephen Cattle
The University of Sydney, Australia

O61-5 17:25 **Evaluation of Electrical Resistivity Tomography Method for Estimating Physicochemical Properties of Mining Wastes**
Maria Gabarron[1], Jose A. Acosta[1*], Pedro Martinez[1], Angel Faz[1] and Joselito M. Arocena[2]
[1]Universidad Politecnica de Cartagena, Spain; [2]University of Northern British Columbia, Canada

O61-6 17:40 **To the Issue of Metallization of the Mining Site Soils and the Biosphere in Whole**
Vladimir Alekseenko[1], Alexey Alekseenko[2*], Inna Alekseenko[2] and Svetlana Voronets[3]
[1]Novorossiysk State Maritime University, Russia; [2]Lomonosov Moscow State University, Russia; [3]Southern Federal University, Russia

O61-7 17:55 **Effects of Coarse Woody Debris Extract on Nitrogen Transformation Rates of Reclaimed Oil Sands Soils in Alberta, Canada**
Jin-Hyeob Kwak[1], Scott X. Chang[1*], M. Anne Naeth[1] and Wolfgang Schaaf[2]
[1]University of Alberta, Canada; [2]BTU Cottbus, Germany

Oral Session No. 62

201 (2F)

[C4.4-2] Widening the Soil Science Course to the Various Directions of Scientific and Humanistic Area

June 12 (Thu), 16:20 - 18:10

Convenor: Zueng-Sang Chen (Taiwan National University, Taiwan)/ Keun-Yook Chung (Chungbuk National University, Korea)

O62-1 16:20 **Dirt Dialogues: An Integrated Art Exhibition, Film Program, and Emerging Dialogue at the 20th WCSS**
Alexandra Toland* and Gerd Wessolek
Technical University of Berlin / German Soil Science Society (DBG), Germany

O62-2 16:50 **Soil Science Society of America: Advancing Soil Science across Disciplines**
Jan Hopmans[1]* and David Lindbo[2]
[1]University of California Davis, USA; [2]North Carolina State University and Soil Science Society of America, USA

O62-3 17:10 **Teaching Soils and Soil Degradation using a Virtual Globe Approach**
Erik Cammeraat* and Harry Seijmonsbergen
University of Amsterdam, Netherlands

O62-4 17:30 **Towards a Concept that Frames Soil Science Knowledge Required by a Diverse Range of End-users**
Damien Field*, Stephen Cattle, Alex Mcbratney and Tony Koppi
The University of Sydney, Australia

O62-5 17:50 **Teaching Soils and Telling Stories with Digital Maps**
Darrell G. Schulze[1]*, Alfred E. Hartemink[2], Minerva J. Dorantes[1], David M. Evans[2], John G. Graveel[1], Phillip R. Owens[1] and George E. Van Scoyoc[1]
[1] Purdue University, USA; [2]University of Wisconsin - Madison, USA

Oral Session No. 63

202 (2F)

[C1.2-1] Pedodiversity and Ecological Services - Bridging Soil Geography and Land Use

June 12 (Thu), 16:20 - 18:10

Convenor: Reinhold Jahn (University of Halle, Germany)

O63-1 16:20 **A Framework for Assessing and Reporting on Soil Assets, their State and Trend**
Peter Wilson[1]* and Richard Thackway[2]
[1] CSIRO, Australia; [2]The University of Queensland, Australia

O63-2 16:50 **Sustaining Ecosystem Services based on an Understanding of Pedodiversity: a Global System based on Cloud Computing, Mobile Apps and Crowdsourcing**
Thomas Reinsch[1], Jeffrey Herrick[2]*, Jon Hempel[1], Keith Shepherd[3], David Smith[1], Josh Beniston[2] and Lee Norfleet[1]
[1] USDA-NRCS, USA; [2]USDA-ARS, USA; [3]ICRAF, Kenya

O63-3 17:10 **Coupled Analysis of Pedodiversity and Surface Water Diversity for Case Areas from the Developed East and Less Developed Central China**
Jinlong Duan[1], Xuelei Zhang[1]* and Guangping Xiao[2]
[1] Zhengzhou University, China; [2]Shandong Normal University, China

O63-4 17:30 **Development of Ecological Site Descriptions in Coordination with Soil Survey**
David Smith*, Joel Brown, Brandon Bestelmeyer, George Peacock and Susan Andrews
USDA, USA

O63-5 17:50 **Land-related Resource Efficiency in Europe. Focus on Soil-based Ecosystem Services**
Geertrui Louwagie[1], Mirko Gregor[2], Christoph Schroeder[3], Emanuele Mancosu[3], Daniel Franzelin[4] and Florence Stoeger[4]
[1] European Environment Agency, Denmark; [2] European Topic Centre for Spatial Information and Analysis, Luxembourg; [3] European Topic Centre for Spatial Information and Analysis, Spain; [4] European Topic Centre for Spatial Information and Analysis, Austria

Oral Session No. 64

Halla A (3F)

[C2.4-3] Minerals as Regulators of Carbon Flow through Soils

June 12 (Thu), 16:20 - 18:10

Convenor: Balwant Singh (The University of Sydney, Australia)/ Markus Kleber (Oregon State University, USA)

O64-1 16:20 **The Instability of Stable Organic Matter Mineral Associations**
Peter Nico*
Lawrence Berkeley Laboratory, USA

O64-2 16:50 **Organo-mineral Interactions in Contrasting Soils under Natural Vegetation**
Edward Jones and Balwant Singh*
The University of Sydney, Australia

O64-3 17:10 **Aggregation of Humic Acid during Coprecipiation with Ferrihydrite**
Claudio Colombo[1]*, Giuseppe Palumbo[1], Ruggero Angelico[1], Andrea Ceglie[1], He Ji-Zheng[2] and Hyen Goo Cho[3]
[1]University of Molise v. De Sanctis, Italy; [2]Chinese Academy of Sciences, China; [3]Gteongsang National University, Korea

O64-4 17:30 **Comparing the Stability and Chemistry of Soil Organic Carbon Protected via Pyrogenesis, Aggregation and Mineral-association**
Eleanor Hobley[1], Garry Willgoose[1], Silvia Frisia[1] and Geraldine Jacobsen[2]
[1]The University of Newcastle, Australia; [2]Australian Nuclear Science and Technology Organization, Australia

O64-5 17:50 **Assessing Protein-mineral Interactions: Adsorption Versus Fragmentation**
Stephany S Chacon[1], Suet Yi Liu[2], Musahid Ahmed[2] and Markus Kleber[1]
[1]Oregon State University, USA; [2]Lawrence Berkeley National Laboratory, USA

Oral Session No. 65

Halla B (3F)

[WG1] Soil Monitoring for Mankind and Environment Safety

June 12 (Thu), 16:20 - 18:10

Convenor: Dominique Arrouays (INRA, France)

O65-1 16:20 **Digital Mapping of Soil Change**
Budiman Minasny[1]*, Alex. B. Mcbratney[1], Dominique Arrouays[2], Brendan Malone[1] and Uta Stockmann[1]
[1]The University of Sydney, Australia; [2]INRA Orleans, France

O65-2 16:50 **Can We Map Ecosystem Services from Soil at Regional and National Scales?**
Richard Macewan
Farming Systems Research, Australia

O65-3 17:05 **Soil Spectroscopy in the Africa Soil Information Service**
Keith Shepherd
World Agroforestry Centre (ICRAF), Kenya

O65-4 17:20 **Accumulation and Distribution Patterns of Pahs and Trace Metals in Forest Floors**
Xiu-Hong Yang*, Shi-Zhong Wang, Rong-Liang Qiu, Zhi-Wen Fang, Xiong-Fei Huang and Dan Mo
Sun Yat-sen University, China

O65-5 17:35 **Functional Digital Soil Mapping: Methods from Southern Africa**
George Van Zijl and Pieter Le Roux
University of the Free State, South Africa

O65-6 17:50 **Interpretation of Vegetation and Topographic Features Related To Soil Types in Amazon Forest: Comparison of Two Watersheds by the Use of Remote Sensing Data and GIS**
Osvaldo Jose Ribeiro Pereira[1], Celia Regina Montes[1]*, Yves Lucas[2]* and Adolpho Jose Melfi[3]*
[1] NUPEGEL, CENA, Universidade de Sao Paulo, Brazil; [2] PROTEE, Universite du Sud Toulon-Var, France; [3] NUPEGEL, ESALQ, IEE, Universidade de Sao Paulo, Brazil

Oral Session No. 66

Samda (3F)

[WG12] Unique Contributions of Hydropedology to Integrated Soil and Water Sciences

June 12 (Thu), 16:20 - 18:10

Convenor: Henry Lin (Penn State University, USA)/ Brent Clothier (New Zealand Institute for Plant & Food Research, New Zealand)/ Xiaoyan Li (Bejing Normal University, China)/ Hans-Joerg Vogel (Helmholtz Centre for Environmental Research, Germany)

O66-1 16:20 **Towards the Unification of Soil Formation and Soil Functions**
Henry Lin
Penn State University, USA

O66-2 16:50 **A View of Pedogenesis as the Co-evolution and Spatial Organisation of Soils, Landforms, Vegetation, and Hydrology**
Garry Willgoose[1]*, Gregory Hancock[1], Dimuth Welivitiya[1], Sagy Cohen[2], Eleanor Hobley[1] and Patricia Saco[1]
[1]The University of Newcastle, Australia; [2]The University of Alabama, USA

O66-3 17:10 **Hydropedological Responses to Vegetation Degradation and Recovery Processes in the Semiarid Region**
Xiao-Yan Li*
Beijing Normal University, China

O66-4 17:30 **Water Balance Dynamics in Mixed Crop-livestock Systems of Northern Ghana: Unraveling the Interactions between Farm-level and Landscape Fluxes in the Face of Climate Change**
Fred Kizito[1]*, Emmanuel Panyan[2], Augustine Ayantunde[3], Karbo Naminong[2], Franklin Avornyo[2] and Justine Cordingley[1]
[1]International Institute of Tropical Agriculture (CIAT), Kenya; [2] Council for Scientific and Industrial Research, Ghana; [3] International Livestock Research Institute, Burkina Faso

O66-5 17:50 **The Relationship between Histosols and River Captures in the Atlantic Plateau Paulista, Southeastern Brazil**
Deborah De Oliveira
University of Sao Paulo, Brazil

18:30~ 20:00 Gala Dinner (Tamna B)

Oral Session No. 67

Baekrok A+B (1F)

[IDS5] B: Biochar Soil Amendment for Environmental and Agronomic Benefits

June 13 (Fri), 10:10 - 12:40

Convenor: Yong Sik Ok (Kangwon National University, Korea)/ Johannes Lehmann (Cornell University, USA)/ Genxing Pan (Nanjing Agricultural University, China)/ Sophie Minori Uchimiya (USDA-ARS, USA)

O67-1 10:10 **Biochar Stability in Soils: Mechanisms of C Sequestration and Fertility Improvements**
Yakov Kuzyakov
University of Gottingen, Germany

O67-2 10:30 **A Classification System for Biochars Applied to Soils**
Marta Camps Arbestain[1]*, Jim E. Amonette[2], Balwant Singh[3], Tao Wang[4] and Hans-Peter Schmidt[5]
[1]Massey University, New Zealand; [2]Pacific Northwesy National Laboratory, USA; [3]The University of Sydney NSW, Australia; [4]Institute of Agriculture and Environment, New Zealand; [5]Ithaka Institute , Switzerland

O67-3 10:43 **Assessing Long-term Impacts of Contrasting Biochars on Soil Functionality and P Availability**
Lukas Van Zwieten[1]*, Mark Farrell[2], Mick Rose[3], Flavio Fornasier[4], Warwick Dougherty[1], Terry Rose[5], Stephen Kimber[1], Josh Rust[1], Stephen Morris[1] and Annette Cowie[6]
[1]NSW Department of Primary Industries, Australia; [2] CSIRO, Australia; [3]Monash University, Australia; [4]Consiglio per la Ricerca e la Sperimentazione in Agricoltura, Italy; [5]Southern Cross University, Australia; [6]University of New England, Australia

O67-4 10:56 **XPS, NEXAFS and FTIR Spectroscopy of Aged Biochar in Soils**
Balwant Singh[1], Cliff Johnston[2], Yunying Fang[1], Bruce Cowie[3] and Lars Thomsen[3]
[1]The University of Sydney, Australia; [2]Purdue University, USA; [3]Australian Synchrotron, Australia

O67-5 11:09 **Aggregate Dynamics Influenced by Biochar Addition using 13C Natural Abundance**
Gayoung Yoo[1], Hyunjin Kim[1], Jong-Yun Choi[2] and Yongsik Ok[3]
[1]Kyung Hee University, Korea; [2] Pusan National University, Korea; [3] Kangwon National University, Korea

O67-6 11:22 **Impacts of Phosphorus Type and Spatial Relation to Biochar on Bean-mycorrhizal Symbioses and Crop Phosphorus Nutrition in a Degraded Acrisol**
Steven Vanek* and Johannes Lehmann
Cornell University, USA

O67-7 11:35 **Inhibitory Effects of Biochar on Phenol Oxidase in Agricultural Soils**
Hojeong Kang[1]*, Hangsong Lee[1], Gayoung Yoo[2] and Yong-Sik Ok[3]
[1]Yonsei University, Korea; [2]Kyunghee University, Korea; [3]Kangwon National University, Korea

O67-8 11:48 **Production of Charred Plants and Subsequent their Distribution, Behavior and Function in Soils**
Yukiko Yanagi[1], Haruo Shindo[1] and Syusaku Nishimura[2]*
[1]Yamaguchi University, Japan; [2]Japan Atomic Energy Agency, Japan

O67-9 12:01 **Functions of Biochar on Physical Properties and Erosion Potential in a Hardsetting Soil**
Shih-Hao Jien[1]*, Chin-Yu Lee[1], Chuan-Chi Chien[2] and Wei-Hsin Chien[1]
[1]National Pingtung University of Science and Technology, Taiwan; [2]Industrial Technology Research Institute, Taiwan

O67-10 12:14 **Biochar Addition to Soils: Implications for the Efficacy of Pesticides**
Rai S. Kookana, Sheridan Martin, Mark Farrell and Lynne Macdonald
CSIRO, Australia

O67-11 12:27 **An Investigation of Soil-biochar Aggregates and Internal and External Surface Deposits on Biochar Particles in a Sandy Earth using Scanning Electron Microscopy**
Kerrie Burns[1], Joe Herbertson[2] and Robert J. Gilkes[3]*
[1]University of Western Australia, The Crucible Pty Ltd, Australia; [2]The Crucible Group Pty. Ltd., Australia; [3]University of Western Australia, Australia;

Oral Session No. 68

Yeongju A+B (1F)

[IDS6] Soil Microbial Ecology under Stress and Global Climate Change

June 13 (Fri), 10:10 - 12:40

Convenor: Tongmin Sa (Chungbuk National University, Korea)/ Suppiah Sundaram (Chungbuk National University, Korea)

O68-1 10:10 **Plant-fungal Interactions under Elevated CO2: Impact on Soil Organic Carbon**
Shuijin Hu
North Carolina State University, USA

O68-2 10:40 **Integrating Omics to Understand Soil C Cycling Responses to Precipitation Variation**
David Myrold[1]*, Maude David[2], Emmanuel Prestat[3], Lydia Zeglin[3], Peter Bottomley[1], Robert Hettich[4], Janet Jansson[2], Ari Jumpponen[3], Charles Rice[3], Susannah Tringe[5] and Nathan Verberkmoes[6]
[1]Oregon State University, USA; [2]Lawrence Berkeley National Laboratory, USA; [3] Kansas State University, USA; [4]Oak Ridge National Laboratory, USA; [5]Joint Genome Institute, USA; [6]New England Biolabs, USA

O68-3 11:00 **Raising Atmospheric Carbon Dioxide : Effect on Structure of Soil Microbial Communities and Functions Related to Terrestrial N Cycle**
Divyashri Baraniya[1]*, Edoardo Puglisi[2], Maria-Teresa Ceccherini[1], Anna Lavecchia[3], Giacomo Pietramellara[1]*, Luigi Cattivelli[4] and Paolo Nannipieri[1]
[1] University of Florence, Italy; [2]Catholic University of Piacenza, Italy; [3] University of Bari, Italy; [4]Agricultural Research Council, Italy

O68-4 11:20 **Interactions and Feedbacks between Above and Below-ground Ecosystems under Elevated CO2 and Elevated Temperature**
Catriona Macdonald*, Amit Khachane, Craig Barton, David Ellsworth, Ian Anderson and Brajesh Singh
University of Western Sydney, Australia

O68-5 11:40 **The Effects of Continuous Cabbage Cropping on Soil Microbial Communities Structure**
Yu Gao* and Guanghui Xu
Shanghai Chunhui Agricultural Biotechnology Co., Ltd.; Anhui Yongda Agricultural Biotechnology Co., Ltd., China

O68-6 12:00 **A Polyphasic Approach to Study Arbuscular Mycorrhizal Fungi Activity and Community Structure Changes with Respect to Soil Salinity in Saemangeum Reclaimed Land of South Korea**
Ramasamy Krishnamoorthy[1], Changgi Kim[2], Parthiban Subramanian[1], Gopal Selvakumar[1] and Tongmin Sa[1]*
[1]Chungbuk National University, Korea; [2]Korea Research Institute of Bioscience and Biotechnology, Korea

O68-7 12:20 **Variation in Drought Tolerance Capability of Endophytic Bacteria Isolated from Different Tissues of Chickpea**
Muhammad Usman Jamshaid*, Muhammad Yahya Khan, Ana Aslam, Hafiz Naeem Asghar and Zahir Ahmad Zahir
University of Agriculture, Pakistan

Oral Session No. 69

Halla A+B (3F)

[IDS14] From Science to Policy – is the Knowledge on Diffuse Pollution by POPs Sufficient to Support Policies

June 13 (Fri), 10:10 - 12:40

Convenor: Bernd M Bussian (Federal Environment Agency, Germany)/ Violette Geissen (Wageningen University, Netherlands)

O69-1 10:10 **Sustainable Development Goals: A Possible Instrument to Tackle Diffuse Soil Pollution?**
Knut Ehlers and Bernd M. Bussian*
German Federal Environment Agency, Germany

O69-2 10:30 **Polluted Ground, a Ticking Time Bomb- the Neglected Issue of Diffuse Soil Pollution**
Violette Geissen
Wageningen University, Netherlands

O69-3 10:50 **Comparative Study on Toxic Metal Contamination in Balu River Water in Bangladesh**
M. E. Haque[1]*, M. A. B. Faruquei[2], M. A. Sattar[1], M. E. Hossain[1] and A. N. A. Haque[1]
[1]Bangladesh Institute of Nuclear Agriculture (BINA), Bangladesh; [2] Bangladesh Agricultural University, Bangladesh

O69-4 11:05 **Impact of Sea Level Rise on Contaminant Mobility and Cycling**
Joshua Lemonte* and Donald Sparks
University of Delaware, USA

O69-5 11:20 **Diffuse Contamination of Forest Soils: Causes, Influencing Factors and Effects**
Milan Sanka[1]*, Klara Komprdova[1], Lubos Boruvka[2], Jarmila Cechmankova[3], Ondrej Sanka[1], Radim Vacha[3], Vit Sramek[4] and Viera Horvathova[3]
[1]Masaryk University, Czech Republic; [2] Czech University of Life Sciences in Prague, Czech Republic; [3]Research Institute for Soil and Water Conservation, Czech Republic; [4]Forestry and Game Management Research Institute, Czech Republic

O69-6 11:35 **Risk Management for Semi-volatile Organic Soil Pollutants in South Korea**
Jeong Ki Yoon, Ji In Kim, Hyoung Seop Kim and Tae Seung Kim*
National Institute of Environmental Research, Korea

O69-7 11:50 **Adsorption of Selected Pharmaceuticals In Representative Soils of the Czech Republic**
Radka Kodesova[1]*, Martin Kocarek[1], Ales Klement[1], Miroslav Fer[1], Oksana Golovko[2] and Roman Grabic[2]
[1] Czech University of Life Sciences Prague, Czech Republic; [2] University of South Bohemia in Ceske Budejovice, Czech Republic

O69-8 12:05 **Uptake of Pharmaceuticals by Soil Minerals**
Zhaohui Li[1]*, Wei-Teh Jiang[2] and Guocheng Lv[3]
[1] University of Wisconsin - Parkside, USA; [2] Department of Earth Science, National Cheng Kung University, Taiwan; [3] School of Materials Science and Technology, China University of Geosciences, China

Oral Session No. 70

Samda (3F)

[IDS15] Advanced Technology on Soil Remediation in Mined Lands

June 13 (Fri), 10:10 - 12:40

Convenor: Jong-Un Lee (Chonnam National University, Korea)

O70-1 10:10 **Recent Advances in Soil Remediation Technologies with Particular Emphasis on Mined Lands**
Ravi Naidu
University of South Australia, Australia

O70-2 10:40 **Arsenic Fate in a Copper Hydro-metallurgic Circuit to Develop a Soil Remediation Strategy**
Margarita Eugenia Gutierrez Ruiz*, Agueda Ceniceros-Gomez, Gerardo Martinez-Jardines, Arturo Aguirre and Francisco Romero
UNAM, Mexico

O70-3 10:55 **Chemical Properties, Arsenic Distribution and Remediation in Leonardite from Mae Moh Mine, Thailand, for Possible Use as Soil Amendment**
Gautier Landrot, Suchada Pochadom and Saengdao Khaokaew*
Kasetsart University, Thailand

O70-4 11:10 **Development of Treatement Agents Synthezied by Acid Mine Drainage Sludge (amds) for Adsorption of As(iii) and As(v) in Contaminated Soil: A Field Study**
Jaeyoung Choi[1]*, Hongkyun Lee[1], Woo-Ram Lee[1], Hyun-Shik Yun[1], Eundo Gee[1], Young-Tae Park[1], Yoon-Su Kim[2] and Jin-Soo Lee[2]
[1] Korea Institute of Science and Technology (KIST), Korea; [2] MIRECO, Korea

O70-5 11:25 **Limiting Factors for Ecological Remediation of Abandoned Rare Earth Elements (REEs) Mine Tailings and a Field Survey of Rees Hyperaccumulating Plants in Ganzhou, China**
Wen-Shen Liu, Chang Liu, Ye-Tao Tang*, Rong-Liang Qiu, Wen-Kai Teng and Zhi-Wei Wang
Sun Yat-Sen University, China

O70-6 11:40 **Production of Poly -Hydroxybutyrate by Different Mixed Culture in a Revised Sequencing Batch Reactor**
Mahdi Sadeghi Pour Marvi*
University of Tehran, Iran

O70-7 11:55 **Stabilization of Arsenic and Heavy Metals in Contaminated Agricultural Soil Around the Mine Areas**
Yoon-Su Kim*, Gwan-In Bak, Mi-Jeong Park, Jin-Soo Lee and Yon-Sik Shim
Mine Reclamation Corporation, Korea

O70-8 12:10 **Assessment of Trace Elements Contamination in the Gold Mine Soils of Komabangou, Tillaberi, Niger**
Abdourahamane Tankari Dan-Badjo[1]*, Yadji Guero[1], Nomaou Dan Lamso[1], Ali Matsallabi[1], Jean Louis Morel[2], Cyril Feidt[2], Thibault Sterckeman[2] and Guillaume Echevarria[2]
[1] Universite Abdou Moumouni de Niamey, Niger; [2] Universite de Lorraine, INRA, France

O70-9 12:25 **Environmental Assessment of Coal Mine Wastes for in-Pit Disposal of Tailings**
Jin Hee Park, Mansour Edraki* and Thomas Baumgart
University of Queensland, Australia

12:40 - 13:40 Lunch (Tamna B)

Oral Session No. 71

Baekrok A (1F)

[C2.5-1] Advances in Techniques to Investigate Chemical, Physical and Biological Interfaces in Soils

June 13 (Fri), 13:40 - 15:30

Convenor: Siobhán Staunton (INRA, France)

O71-1 13:40 **Combining Advanced Analytical Methods to Assess Interfacial Change during Bioweathering of Silicates and Sulfides: Mineral-organic-microbe Interactions Alter Bioaccessibility of Toxic Metal(loid)s**
Jon Chorover*
University of Arizona, USA

O71-2 14:10 **Non-invasive Localization of Organic Matter in Soil Aggregates using SR-×CT**
Stephan Peth[1]*, Anneka Mordhorst[2], Claire Chenu[3], Daniel Uteau Puschmann[1], Patricia Garnier[3], Naoise Nunan[3], Valerie Pot[3], Felix Beckmann[4] and Malte Ogurreck[4]
[1] University of Kassel, Germany; [2] University of Kiel, Germany; [3] INRA Grignon, France; [4] GKSS-Research Centre, Germany

O71-3 14:30 **Assessment of the Effect of the Microbiology of the Extreme Soil Surface on Hydrological Properties Revealed by X-Ray Imaging**
Amin Garbout[1]*, Elena Armenise[2], Sujung Ahn[3], Stefan Doerr[3], Karl Ritz[2], Robert Simmons[2], Craig Sturrock[1], Shinji Suzuki[4] and Sacha Mooney[1]
[1] The University of Nottingham, United Kingdom; [2] Cranfield University, United Kingdom; [3] Swansea University, United Kingdom; [4] Tokyo Univ. of Agriculture, Japan

O71-4 14:50 **Microfluidics for Soil Science**
Davide Ciceri and Antoine Allanore
Massachusetts Institute of Technology, USA

O71-5 15:10 **Zn Sorption to Biogenic Bixbyite-like Mn2O3 Produced by Bacillus Cua Isolated from Soil: Xafs Study with Constraints on Sorption Mechanism**
Zhijun Zhang[1], Hui Yin[1], Wenfeng Tan[1], Luuk K Koopal[2], Lirong Zheng[3], Xionghan Feng[1]* and Fan Liu[1]*
[1]Huazhong Agricultural University, China; [2]Wageningen University, Netherlands; [3]Chinese Academy of Sciences, China

Oral Session No. 72

Baekrok B (1F)

[C2.1-3] Hydro-Ecological Observatories and Advances in Soil Measurements and Sensors

June 13 (Fri), 13:40 - 15:30

Convenor: Yong Bok Lee (Gyeongsang National University, Korea)

O72-1 13:40 **Remote Sensing and Geographic Information Systems and Global Soil Partnership Roles in Soil Monitoring**
Seyed Kazem Alavipanah
University of Tehran, Iran

O72-2 14:10 **Quantification and Visualisation of Dairy Pasture Soil Macroporosity Using a Computed**
Abdur Rab[1]*, Sharon Aarons[1], Mark Imhof[1] and Rebecca Haling[2]
[1] Department of Environment and Primary Industries, Australia; [2] University of New England, Australia

O72-3 14:30 **Quantifying the Impacts of Land Use Change on Soil Water Movement using Environmental Tracers on the Loess Tableland of China**
Zhi Li* and Xi Chen
Northwest A&F University, China

O72-4 14:50 **Advanced Method for Quantifying Soil Hydrological Properties in the Laboratory**
Uwe Schindler[1]*, Lothar Mueller[1] and Jose Doerner[2]
[1] ZALF Muencheberg, Germany; [2]Universidad Austral de Chile, Chile

O72-5 15:10 **A Multifunctional Heat Pulse Probe for Soil Physical Property and Process Assessment**
Scott Jones[1], Kashifa Rumana[1], Pawel Szafruga[1], Masaru Sakai[2] and Markus Tuller[3]
[1] Utah State University, USA; [2] Mie University, Japan; [3]The University of Arizona, USA

Oral Session No. 73

Yeongju A (1F)

[C3.2-1] A: Soil Erosion and Degradation on Agriculture Land

June 13 (Fri), 13:40 - 15:30

Convenor: Panos Panagos (European Commission, Joint Research Centre, Italy)

O73-1 13:40 **Continental Present-Day Erosion Rates in a European Context**
Olivier Cerdan[1]*, Aurore Gay[1], Valentin Landemaine[1] and Anthony Foucher[2]
[1] BRGM, France; [2] Universite de Tours, France

O73-2 14:10 **Mapping Land Degradation at Global Scale, a Reflection**
Freddy Nachtergaele[1]*, Riccardo Biancalani[2], Godert Van Lynden[3], Ben Sonneveld[4], Claudio Zucca[5] and Monica Petri[2]
[1] FAO, Belgium; [2] FAO, Italy; [3] ISRI, Netherlands; [4]Vrije Universiteit, Netherlands; [5]University of Sassari, Italy

O73-3 14:35 **Agricultural Water Balance in Korea**
Ki-Cheol Eom[1]*, Pil-Kyun Jung[1] and Yeun-Kyu Sonn[2]
[1] SEjong Institute of Data Analysis (SEIDA), Korea; [2]National Academy of Agricultural Science, Korea

O73-4 15:50 **Gully Expansion in Agricultural Fields in Andalucia: the Role of Slope Failure and Water Erosion in Relation to Land Management, Cover, and Rooting**
Erik Cammeraat[1]*, Bianca Pricope[2] and Tom Vanwalleghem[3]
[1]Universiteit van Amsterdam, Netherlands; [2]Business Development Group, Romania; [3]University of Cordoba, Spain

O73-5 15:05 **Soil Erodibility Model for the Dry Tropics of Northeastern Australia**
Peter Zund* and James Payne
Queensland Government, Australia

Oral Session No. 74

Yeongju B (1F)

[C3.3-4] A: Soil Management Strategy for Enhancing Crop Yields

June 13 (Fri), 13:40 - 15:30

Convenor: Wolfgang Burghardt (University Duisburg-Essen, Germany)/ Chunsheng Hu (Chinese Academy of Sciences, China)

O74-1 13:40 **Are Soil Nitrogen and Organic Matter Contents Declining due to Continuous Application of Nitrogen Fertilizers in Cereals?**
Bijay Singh
Punjab Agricultural University, India

O74-2 14:10 **Consider of Non-exchangeable and Exchangeable Potassium Status of Soils under Sugarcane Cultivation in Some Fields with Different Ages**
Mahmoud Alimohammadi, Sattar Shakiba and Alireza Zahirnia
Sugarcane & by products company, Iran

O74-3 14:30 **The Influence of Tillage Sistems on Soil Physical Properties and on Oil-seed Rape Yield in Central-northern Area of Moldavian Plateau, Romania**
Lucian Raus, George Chiriac, Denis Topa, Costica Ailincai and Jitareanu Carmenica Doina
The University of Agricultural Sciences and Veterinary Medicine, Romania

O74-4 14:50 **Soil Nutrient Diagnostics using Mid-infrared Spectroscopy**
Rao Mylavarapu[1]* and Mike Mclaughlin[2]
[1]University of Florida, USA; [2]CSIRO, Australia

O74-5 15:10 **Agronomic Assessment of Cover Crops in Illinois**
Maria Villamil and Emerson Nafziger
University of Illinois, USA

Oral Session No. 75

201 (2F)

[C4.5-2] Cultural Perspectives on Soils and Soil Science

June 13 (Fri), 13:40 - 15:30

Convenor: Bruce R. James (University of Maryland, USA)/ Alexandra Regan Toland (Technische Universität Berlin, Germany)

O75-1 13:40 **Gods of Soil**
Budiman Minasny
The University of Sydney, Australia

O75-2 14:00 **Soil and the Development of Agricultural Systems in South Korea since the Neolithic**
Heejin Lee
Korea University

O75-3 14:20 **The Soil Legacies of 18th and 19th C Illicit Scotch Whisky**
Clare Wilson* and Hazel Ramage
University of Stirling, United Kingdom

O75-4 14:40 **The 'Living Soils' Project - Journey into the Earth**
Winfried E.H. Blum[1] and Beatrice S. Voigt[2]
[1]University of Natural Resources and Life Sciences, Austria; [2]Beatrice Voigt Art and Culture Projects & Edition, Germany

O75-5 15:00 **Developments and Departures in the Philosophy of Soil Science**
Thomas Sauer
USDA-ARS-NLAE, USA

Oral Session No. 76

202 (2F)

[C2.4-2] Roles of Minerals as Suppliers and Regulators of Plant Nutrients

June 13 (Fri), 13:40 - 15:30

Convenor: David Manning (Newcastle University, United Kingdom)/ Balwant Singh (University of Sydney, Australia)

O76-1 13:40 **Release of K from Silicate Rock Powders**
Clare Mccann, Safiya Mohammed, Neil Grey, Kirsten Brandt, Adrian Oila, Maggie White, Ian Singleton and David Manning*
Newcastle University, United Kingdom

O76-2 14:00 **Potassium Release from Feldspar Powders: from Structure-property Assessment to Leaching Experiments**
Kejing Li, Rebecca Stokes, Taisiya Skorina, Davide Ciceri and Antoine Allanore
Massachusetts Institute of Technology, USA

O76-3 14:15 **The Enigma of Potassium Availability in Vertisols**
Balwant Singh[1]*, Kathryn Taylor[1] and Graeme Schwenke[2]
[1]The University of Sydney, Australia; [2]NSW Department of Primary Industries, Australia

O76-4 14:30 **Dissolution and Release of Silicon from Diatomaceous Earth and Its Effect on Rice in Acidic, Neutral and Alkaline Soils of South India**
Sandhya Kollalu[1], Prakash Nagabovanalli B[1]*, Parashuram Chandravanshi[2], Vijay Mahanthesh H[1], Kadalli G G[1] and Jayadeva H M[1]
[1]University of Agricultural Sciences, India; [2]Agricultural Research Station Kathalagere, India

O76-5 14:45 **Fertilizing Ferralitic Soils in Cameroon using Basalt Powder from the Cameroon Volcanic Line: an Application with Maize Farming in South Cameroon**
Jean Pierre Tchouankoue and Arliane Nicole Tetchou Tchekambou
University of Yaounde I, Cameroon

O76-6 15:00 **Influence of Cropping Practices on Clay Mineralogy: Insights from the Morrow Plots Experimental Fields**
Bruno Lanson[1]*, Tauhid Belal Khan[1], Fabien Hubert[2], Nathaniel Findling[1], Camille Rivard[3] and Michelle M. Wander[4]
[1]University. Grenoble - CNRS, France; [2]University. Poitiers - CNRS, France; [3]European Synchroton Radiation Facility, France; [4]University. Illinois at Urbana, USA

O76-7 15:15 **Weathering of Palygorskite in the Rhizosphere of Rapeseed**
Farhad Khormali*, Motahareh Sadat Hashemi Rakavandi, Esmaeil Dordipour and Soheila Ebrahimi
Gorgan University of Agricultural Sciences and Natural Resources, Iran

Oral Session No. 77

Halla A (3F)

[C2.2-3] A: Behavior and Fate of Pollutants Entering the Soil Environment

June 13 (Fri), 13:40 - 15:30

Convenor: Teodoro M. Miano (UniversitàdegliStudi di Bari, Italiy)/ Chang Oh Hong (Pusan National University, Korea)

O77-1 13:40 **Dissolved Organic Matter Induces the Mobilization of Arsenic in Soil**
Nanthi Bolan[1]* and Anitha Kunhikrishnan[2]
[1] University of South, Australia; [2] National Academy of Agricultural Science, Korea

O77-2 14:10 **Volatilization Processes of Diesel oil from Selected Soils**
Yanfei Ma[1], Stephen Anderson[2]*, Xilai Zheng[3], Jie Lu[1] and Xuedong Feng[1]
[1]Shandong University of Technology, China; [2]University of Missouri, Columbia, USA; [3]Ocean University of China, China

O77-3 14:30 **Lithium, an Emerging Environmental Contaminant, is Mobile in the Soil Plant System**
Brett Robinson*, Rohith Yalamanchali and Nick Dickinson
Lincoln University, New Zealand

O77-4 14:50 **Quantifying the Effect of Interactions between Soil Minerals and Organic Matter on Butachlor Sorption**
Yan He[1]*, Zhongzhen Liu[2], Xinquan Shen[1], Xinfeng Li[1] and Jianming Xu[1]
[1]Zhejiang University, China; [2]Guangdong Academy of Agricultural Sciences, China

O77-5 15:10 **Classification and Modelling of Non-extractable Residue (NER) Formation from Xenobiotics in Soil - a Synthesis**

Matthias Kaestner[1]*, Karolina Nowak[2], Anja Miltner[1], Stefan Trap[3] and Andreas Schaeffer[2]
[1]Helmholz-Centre for Environmental Research - UFZ, Germany; [2] RWTH Aachen, Germany; [3]Technical University of Denmark, Denmark

Oral Session No. 78

Halla B (3F)

[WG5] Mitigating Greenhouse Gas Emissions from Rice Paddy Soils

June 13 (Fri), 13:40 - 15:30

Convenor: Kazuyuki Yagi (National Institute for Agro-Environmental Sciences, Japan)/ Charles W. Rice (Kansas State University, USA)

O78-1 13:40 **Considering Stakeholder Perceptions and Institutional Settings for Mitigation Projects in Rice Production**
Reiner Wassmann*, Julie-Ann Basconcillo, Bjoern-Ole Sander and Ngo Duc Minh
International Rice Research Institute, Philippines

O78-2 14:10 **On-going Research Activities to Mitigate Greenhouse Gas Emission from Paddy Fields in China**
Xiaoyuan Yan
Chinese Academy of Sciences, China

O78-3 14:30 **Effectiveness of Surface Drainage during Fallow Seasons on Mitigating Methane Emissions from Poorly-drained Paddy Fields in Japan**
Yutaka Shiratori and Yuichiro Furukawa
Niigata Agricultural Research Institute, Japan

O78-4 14:50 **Nitrogen and Water Management Practices for Sustainable Rice Production and Reducing Green House Gas Emission**
M. Rafiqul Islam[1]*, Azmul Huda[1], Md. Rafiqul Islam[1], M. Jahiruddin[1] M. Abdus Satter[2], Yam Gaihre[2] and Upendra Singh[3]
[1] Bangladesh Agricultural University, Bangladesh; [2]International Fertilizer Development Center, Bangladesh; [3]International Fertilizer Development Center, USA

O78-5 15:10 **Preliminary Studies on Methane Mitigation in Rice Production Systems in Santa Catarina, Brazil**
Magda Lima[1], Domingos Savio Eberhardt[2], Rosa Toyoko Shiraishi Frighetto[1], Jose Alberto Noldin[2] and Maria Conceicao Peres Young Pessoa[1]
[1] Brazilian Corporation for Agriculture Research, Brazil; [2]Epagri-Estacao Experimental de Itajai, Brazil

Oral Session No. 79

Samda (3F)

[C2.3-3] Microbial Biodiversity and Ecosystem Functions in Volcanic Soils

June 13 (Fri), 13:40 - 15:30

Convenor: Jong-Shik Kim (Gyeongbuk Institute for Marine Bioindustry, Korea)/ Gary M. King (Louisiana State University, USA)

O79-1 13:40 **Bacterial Community Structures in Rhizosphere Microsites of Lolium Perenne Var. Nui Grown in Chilean Andisol as Revealed by Pyroseque**
Lorena Lagos[1]*, Milko Jorquera[1], Fumito Maruyama[2], David E. Crowley[3] and M. Luz Mora[1]
[1] Universidad de La Frontera, Chile; [2]Tokyo Medical and Dental University, Japan; [3]University of California Riverside, USA

O79-2 14:05 **Biogeochemical, Cultivation and Molecular Ecological Analyses of Geothermally-heated Soils on Kilauea Volcano, Hawaii**
G.m. King*, C.e. King and C. Judd
Louisiana State University, USA

O79-3 14:30 **Temperature Dependency of Soil Nitrogen Mineralization in an Andosol is Affected by Phosphate Availability**
Chihiro Matsuoka, Toru Uno, Ryosuke Tajima, Toyoaki Ito and Masanori Saito*
Tohoku University, Japan

O79-4 14:45 **Fungal Translocation of Microelements during Fagus and Quercus Leaf Litter Decomposition in a Volcanic Soil Ecosystem**
Flavia Pinzari*, Loredana Canfora, Alessandro Florio, Melania Migliore, Barbara Felici, Maria Teresa Dell' Abate and Rosario Napoli
Consiglio per la Ricerca e la sperimentazione in Agricoltura. Centro di ricerca per lo studio delle relazioni tra pianta e suolo, Italy

O79-5 15:00 **Unravelling the Influence of Plant Cover and Microbial Diversity on Ecosystem Function of Melanic Andosols**
Melania Migliore*, Loredana Canfora, Alessandro Florio, Flavia Pinzari, Maria Teresa Dell'abate, Anna Benedetti and Rosario Napoli
Agriculture Research Council - Research Centre for the Soil-Plant System, Italy

O79-6 15:15 **Early Microbial Succession in Recent Unvegetated Volcanic Deposits of Miyake-jima Island, Japan**
Hiroyuki Ohta[1]*, Reiko Fujimura[1], Yong Guo[2], Yoshinori Sato[3], Tomoyasu Nishizawa[1], Wataru Suda[4], Seok-Won Kim[4], Kenshiro Oshima[4], Masahira Hattori[4] and Takashi Kamijo[5]
[1] Ibaraki University, Japan; [2]Tokyo University of Agriculture and Technology, Japan; [3]National Research Institute for Cultural Properties, Japan; [4]The University of Tokyo, Japan; [5]University of Tsukuba, Japan

Oral Session No. 80

401 (4F)

[C3.3-3] Ecological Significance of Soil Organic Phosphorus

June 13 (Fri), 13:40 - 15:30

Convenor: Leo Condron (Lincoln University, New Zealand)/ Ben Turner (Lincoln University, New Zealand)

O80-1 13:40 **Oxygen Isotopes for Unravelling Phosphorus Transformations in the Soil/plant System: A Review**
Emmanuel Frossard*, Federica Tamburini, Stefano Bernasconi, Verena Pfahler and Christian Von Sperber
ETH Zurich, Switzerland

O80-2 14:10 **N-fixing Tree Species (Acacia Mangium) Introduced in Eucalyptus Forest Modify Soil Organic P and Low Molecular Weight Organic Acid Pools: A Case Study from Tropical Forest Ecosystem in Congo**

Kittima Waithaisong, Agnes Robin, Agnes Martin, Michael Clairotte, Manon Villeneuve and Claude Plassard*
UMR Eco&Sols, France

O80-3 14:30 **Understanding Organic Phosphorus Speciation in Agricultural Soils: Correlation between P Types in Relation to Carbon (C), Nitrogen (N), and Organic Phosphorus (PO) Compounds**
Melinda R. Moata[1]*, Ann M Mcneill[2], Ronald J. Smernik[2], Lynne M. Macdonald[2] and Ashlea L. Doolette[2]
[1]The Univ. of Adelaide, Australia, Indonesia; [2]The University of Adelaide, Australia

O80-4 14:50 **Abundance and Diversity of Phod Bacterial Communities as Influenced by Long-term Agricultural Management**
Tandra Fraser[1]*, Derek Lynch[2], Martin Enzt[3] and Kari Dunfield[1]
[1]University of Guelph, Canada; [2]Dalhousie University, Canada; [3]University of Manitoba, Canada

O80-5 15:10 **The Accumulation of Inorganic and Organic P Forms in Fertilized Pasture Soils**
Timothy Mclaren[1]*, Ronald Smernik[1], Richard Simpson[2], Mike Mclaughlin[1], Therese Mcbeath[3], Chris Guppy[4] and Alan Richardson[2]
[1]The University of Adelaide, Australia; [2]National Flagship/ CSIRO Plant Industry, Australia; [3]CSIRO Sustainable Agriculture Flagship, Australia; [4]University of New England, Australia

Oral Session No. 81

402 (4F)

[DS1] Micromorphological Answers to Palaeopedological and Polypedogenetic Questions

June 13 (Fri), 13:40 - 15:30

Convenor: Rosa Maria Poch (University of Lleida, Spain)/ Daniela Sauer (Dresden University of Technology, Germany)

O81-1 13:40 **Tracing Palaeo-environmental and Land-use Changes in Polygenetic Soils of the Alpine Forelands (Germany) and the Northern Alps (Austria) - a Soil Micromorphological and Pedological Approach**
Astrid Kirsten Roepke[1]*, Vanessa Baehr[1] and Carlo Dietl[2]
[1]Goethe University, Germany; [2]Gesteinslabor Jahns, Germany

O81-2 14:10 **Paleohydrology and Ancient and Historical Paddysol**
Heejin Lee*
Korea University, Korea

O81-3 14:30 **Soil Sequences in the Young Morainic Landscapes of North-eastern Poland**
Marcin Switoniak*, Przemyslaw Charzynski and Lukasz Mendyk
Nicolaus Copernicus University, Poland

O81-4 14:50 **Microtomographic Studies of Loamy Soils: Problems and Prospects**
Elena Skvortsova[1], Kirill Gerce[2]*, Dmitry Korost[3], Konstantin Abrosimov[1] and Andrey Ivanov[1]
[1]V.V. Dokuchaev Soil Science Institute, Russia; [2]CSIRO Land and Water, Australia; [3]Moscow State University, Russia

O81-5 15:10 **Modelling Pedogenesis in the Anthropocene**
Sophie Leguedois[1]*, Geoffroy Sere[2], Jerome Cortet[3], Stephanie Ouvrard[1], Francoise Watteau[2], Christophe Schwartz[2] and Jean Louis Morel[2]
[1]Inra, France; [2]Universite de Lorraine, France; [3]Universite Paul Valery Montpellier III, France

15:30~16:20 Cofee Break & Poster Session 4 (3F, 5F Lobby)

Oral Session No. 82

Baekrok A (1F)

[WG13] Progress in Digital Soil Mapping and Global Soil Map

June 13 (Fri), 16:20 - 18:10

Convenor: Mogens Humlekrog Greve (Aarhus University, Denmark)/ Dominique Arrouays (INRA, France)

O82-1 16:20 **Globalsoilmap- the History, Vision and Way Forward**
Jon Hempel[1], Alfred Hartemink[2], Alex Mcbratney[3], Dominique Arrouays[4], Neil Mckenzie[5] and Michael Grundy[6]
[1] Natural Resources Conservation Service, USA; [2] University of Wisconisn-Madison, USA; [3]University of Sydney, Australia; [4]INRA Orleans, France; [5]CSIRO, France; [6]CSIRO, Australia

O82-2 16:40 **Model Averaging for Combining Disaggregated Analogue Soil Maps with Those from Scorpan Kriging: Experience from the Dalrymple Shire, QLD, Australia**
Brendan Malone, Budiman Minasny, Nathan Odgers and Alex Mcbratney
The University of Sydney, Australia

O82-3 16:50 **Spatial Disaggregation using Random Toposequences**
Nathan Odgers*, Alex Mcbratney and Budiman Minasny
The University of Sydney, Australia

O82-4 17:00 **Pedogeomorphometry, Integrating Empirical and Mechanistic Models for Better Prediction of Soil over Space and Time**
Budiman Minasny, Alex Mcbratney and Uta Stockmann
The University of Sydney, Australia

O82-5 17:10 **Modelling of Soil Carbon Variability and Trajectories across the Conterminous US**
Sabine Grunwald[1]*, Xiong Xiong[1], Baijing Cao[1], Alex B. Mcbratney[2], Budiman Minasny[2], C. Wade Ross[1] and Risa Patarasuk[1]
[1]University of Florida, USA; [2]University of Sydney, Australia

O82-6 17:20 **Mapping the Functionality of Soils in Scotland using a Neural Network-based Digital Soil Mapping Approach**
Matt Aitkenhead, Allan Lilly and Helaina Black
The James Hutton Institute, United Kingdom

O82-7 17:30 **Operational Digital Soil Mapping at National Scale: Application of Random Forest to Spatial Prediction of Soil Particle-size Fractions**
Stephen Akpa*, Inakwu Odeh and Thomas Bishop
The University of Sydney, Australia

O82-8 17:40 **Evaluating Total Carbon Stocks using Satellite Images in a Subtropical Wetland: The Everglades, Florida, US**
Jongsung Kim[1], Sabine Grunwald[1]* and Rosanna G. Rivero[2]
[1] University of Florida, USA; [2] University of Georgia, USA

O82-9 17:50 **Spatial Distribution of Soil Organic Carbon in Southern Greenland Assessed following the Globalsoilmap.net Specifications**
Søren Munch Kristiansen[1]*, Kabindra Adhikari[2], Lis Wollesen De Jonge[1] and Mogens Humlekrog Greve[1]
[1]Aarhus University, Denmark; [2]University of Wisconsin-Madison, USA

O82-10 18:00 **Application of Spatial Simulated Annealing Method on a Soil Sampling Scheme in the Road Surrounding Region**
Wei Huangwei* and Zongwei Han
College of Resources & Environment, Huazhong Agricultural University, China

Oral Session No. 83

Baekrok B (1F)

[WG11] Soil Information Exchange Standards and Systems

June 13 (Fri), 16:20 - 18:10

Convenor: Peter Wilson (CSIRO, Australia)/ Rainer Baritz (Federal Institute for Geosciences and Natural Resources (BGR), Germany)

O83-1 16:20 **Developing International Soil Information Exchange Standards**
Peter Wilson[1]* and Rainer Baritz[2]
[1] CSIRO, Australia; [2]Federal Institute for Geosciences and Natural Resources, BGR, Germany

O83-2 16:50 **ISO and Inspire for Digital Soil Data Exchange? Extensions, Improvements and Potential Feedbacks between Similar Standards**
Einar Eberhardt[1]*, Simon Templer[2] and Tomas Reznik[3]
[1]Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]Fraunhofer Institute for Computer Graphics Research IGD, Germany; [3]Masaryk University, Czech Republic

O83-3 17:10 **European Soil Data Centre: a Spatial Data Infrastructure for Research and Policy Making in Europe**
Panos Panagos*, Marc Van Liedekerke, Arwyn Jones and Luca Montanarella
European Commission, Joint Research Centre, Italy

O83-4 17:30 **Best Practice Guidelines for Soil Data Harmonization**
Rainer Baritz[1], Gordon Hudson[2] and Borut Vrscaj[3]
[1] Federal Institute for Geosciences and Natural Resources (BGR), Germany; [2]The James Hutton Institute, United Kingdom; [3]Agricultural Institute of Slovenia, Slovenia

O83-5 17:50 **Towards an Ontology-based Soil Information System**
Yanfeng Shu*, Ahsan Morshed and Ritaban Dutta
CSIRO, Australia

Oral Session No. 84

Yeongju A (1F)

[C3.2-1] B: Soil Erosion and Degradation on Agriculture Land

June 13 (Fri), 16:20 - 18:10

Convenor: Erik Cammeraat (University of Amsterdam, Netherlands)

O84-1 16:20 **Soil Erosion at European Level: a Step Forward data Harmonization and Collection with the Contribution of a European Network**
Panos Panagos[1]*, Katrin Meusburger[2], Luca Montanarella[1] and Marc Van Liedekerke[1]
[1]Joint Research Centre, European Commission, Italy; [2]University of Basel, Switzerland

O84-2 16:40 **Natural Regeneration of Soil Physical Conditions following the Establishment of Permanent Pasture on a Structurally Degraded Soil**
Roger Mclenaghen, Brendon Malcolm, Keith Cameron and Hong Di
Lincoln University, New Zealand

O84-3 17:55 **Impact of Enrichment Planting Activity on Soil Physico-chemical Properties of Degraded Forestland**
Daljit Singh Karam Singh*, Arifin Abdu, Radziah Othman, Shamshuddin Jusop, Nik Muhamad Majid and Hazandy Abdul Hamid, Universiti Putra Malaysia, Malaysia

O84-4 17:10 **Application of Soil Survey to Assess Non-point Source of Elements Contamination to Surface Water in Agriculture Watersheds**
Moustafa Elrashidi
United States Department of Agriculture (USDA), USA

O84-5 17:25 **The Soil Erosion Risk Map of the Sicilian Region (1:250,000 Scale)**
Maria Fantappie, Simone Priori and Edoardo Costantini*
Consiglio per la Ricerca e la sperimentazione in Agricoltura, Italy

O84-6 17:40 **A Sound Measurement of Splash Detachment Rates for Erosion and Eluviation Modelling**
Sophie Leguedois[1]*, Frederic Darboux[1], Cedric Legout[2], Carine Lucas[3], Eric Michel[1], Olivier Planchon[1] and Yves Le Bissonnais[1]
[1]INRA, France; [2]UJF-Grenoble, France; [3]University Orleans, France

Oral Session No. 85

Yeongju B (1F)

[C3.3-4] B: Soil Management Strategy for Enhancing Crop Yields

June 13 (Fri), 16:20 - 18:10

Convenor: Wolfgang Burghardt (University Duisburg-Essen, Germany)/ Chunsheng Hu (Chinese Academy of Sciences, China)

O85-1 16:20 **Industrialization Progress and Application of Slow & Controlled Release Fertilizers in China**
Min Zhang[1]*, Yuechao Yang[1], Lianbu Wan[2], Chengliang Li[1], Hongkun Chen[2] and Li Ma[1]
[1]Shandong Agricultural University, China; [2]Shandong Kingenta Ecological Engineering Co, Ltd, China

O85-2 16:50 **Utility of Soil Analysis Database of Routine Laboratory to Monitor and Describe the Evolution of the Fertility of Costa Rican Soils**
Floria Bertsch* and Juan Carlos Mendez
University of Costa Rica, Costa Rica

O85-3 17:10 **Changes in Soil Fertility under Slash and Burn Systems with Different Land Use Systems in the Peruvian Amazon**
Julio Alegre[1]*, Ruby Vega[1], Eddie Schrevens[2] and Felipe De Mendiburu[1]
[1]Universidad Nacional Agraria La Molina, Peru; [2]University of Leuven, Belgiumu

O85-4 17:30 **Assessment of Nutrient Flows and Balances in Smallholder Cereal-legume-livestock Farms in the Dry Savannas of West Africa**
Andrews Opoku[1]*, Robert Abaidoo[1], Ebenezer Safo[1] and Maman Nouri[2]
[1]KNUST, Ghana; [2]INRAN, Niger

O85-5 17:50 **Decadal Changes of Spatial Distributions of Soil Properties in a Japanese Paddy Field and Their Relationship with Field Management, Rice Yield and Soil Color**
Naoki Moritsuka[1], Keisuke Katsura[1], Kaori Matsuoka[1] and Junta Yanai[2]
[1] Kyoto University, Japan; [2]Kyoto Prefectural University, Japan

Oral Session No. 86

201 (2F)

[C3.4-1] Design and Performance of Cover Systems for Landfills and Contaminated Sites

June 13 (Fri), 16:20 - 18:10

Convenor: Kye-Hoon Kim (The University of Seoul, Korea)

O86-1 16:20 **Water Balance and Soil Physical Properties of a Temporary Landfill Cover in Northwest Germany**
Steffen Beck-Broichsitter*, Heiner Fleige and Rainer Horn
Christian-Albrechts-Universitat zu Kiel, Germany

O86-2 16:50 **Cover Systems and Contaminated Land Remediation Strategies in England**
Steven Pye
Independent freelance consultant and agency contractor with Osborne Richardson, United Kingdom

O86-3 17:10 **Managing Water Flow through Rock Covers on Mine Sites**
Thomas Baumgartl* and Chris Gonzales
The University of Queensland, Australia

O86-4 17:30 **Hydrophysical Properties of Clays Likely to be used for Landfill Liner Construction**
Witold Stepniewski[1]*, Marcin K. Widomski[1] and Rainer Horn[2]
[1]Lublin University of Technology, Poland; [2]Christian Albrechts University, Germany

O86-5 17:50 **Reinforcement and Ductility Effect of Plant Fine Roots on the Soil**
Yunyan Zhou and Kun Xu
China University of Geosciences, China

Oral Session No. 87

202 (2F)

[WG8] Proximal Soil Sensing

June 13 (Fri), 16:20 - 18:10

Convenor: Hak-Jin Kim (Seoul National University, Korea)/ Raphael Viscarra Rossel (CSIRO Land & Water, Australia)

O87-1 16:20 **Practicality of using Proximal Soil Sensing in Agriculture and Natural Resources Management**
Viacheslav Adamchuk[1]*, Raphael Viscarra Rossel[2], Robin Gebbers[3], Marc Van Meirvenne[4] and Asim Biswas[1]
[1]McGill University, Canada; [2]CSIRO Land and Water, Australia; [3]ATB Leibniz-Institut fur Agrartechnik, Germany; [4]Gent University, Belgium

O87-2 16:50 **Identification of Morphological Soil Horizons In-situ using Visible Near Infrared Spectroscopy**
Mario Fajardo*, Alex Mcbratney and Brett Whelan
University of Sydney, Australia

O87-3 17:10 **Soil Visible Near-infrared Spectroscopy: Lessons from the Field**
Pierre Roudier*, Carolyn Hedley and Leo Valette
Landcare Research - Manaaki Whenua, New Zealand

O87-4 17:30 **Electromagnetic Conductivity Imaging (emci) of Soil using a DUALEM-421 and Inversion Modelling Software (EM4Soil)**
John Triantafilis
UNSW, Australia

O87-5 17:50 **In Situ Evaluation of a Visnir Penetrometer for Soil Characterization**
Matteo Poggio, David J. Brown and Ross S. Bricklemyer
Washington State University, USA

Oral Session No. 88

Halla A (3F)

[C2.2-3] B: Behavior and Fate of Pollutants Entering the Soil Environment

June 13 (Fri), 16:20 - 18:10

Convenor: Chang Oh Hong (Pusan National University, Korea)

O88-1 16:20 **Thallium Adsorption-desorption Quantity-intensity Relationships in Different Soils**
Dong-Jin Kim[1], Hong-Seok Yang[1], Won-Jae Lee[1], Da-Seul Kang[1], Byung-Koo Ahn[2] and Jin-Ho Lee[1]*
[1] Chonbuk National University, Korea; [2]Jeollabuk-Do Agricultural Research and Extension Services, Korea

O88-2 16:50 **Assessment of Cadmium Contaminated Soil using Sulfur Oxidizing Bacteria: Batch Tests**
Sang-Eun Oh and Naveed Ahmed
Kangwon National Univ., Korea

O88-3 17:10 **Methods for Visualising Active Microbial Toluene and Benzene Degraders in in Situ Microcosms**
Christian Schurig[1]*, Carsten W. Mueller[1], Carmen Hoeschen[1], Andrea Prager[2], Erika Kothe[3], Henrike Beck[4], Anja Miltner[4] and Matthias Kaestner[4]
[1] Technische Universitaet Muenchen, Germany; [2]Leibniz Institut fuer Oberflaechenmodifizierung, Germany; [3] Friedrich Schiller University of Jena, Germany; [4]Helmholtz Centre for Environmental Research - UFZ, Germany

O88-4 17:30 **Characterising the Functional Relationships of Stable Forms of Organic Carbon in Micro- and Nano-aggregates of Soils with a Focus on High pH Soils**
Ehsan Tavakkoli, Pichu Rengasamy and Glenn Mcdonald
The University of Adelaide, Australia

O88-5 17:50 **A Study of Korean Growing Media's Characteristics**
Lee-Yul Kim[1], Young-Kwon Chung[2]* and Wan-Jin Kim[1]
[1]Korean Growth Culture Media Rearch Institute, Korea; [2]Nong Kyeong Growth Culture Media Co., Korea

Oral Session No. 89

Halla HB (3F)

[C2.5-2] How do Interactions with Organo-Mineral Surfaces Alter the Dynamics and Properties of Microbes and Macromolecules in Soil?

June 13 (Fri), 16:20 - 18:10

Convenor: Siobhán Staunton (INRA, France)/ Qiaoyun Huang (Huazhong Agricultural University, China)

O89-1 16:20 **Congruent Development of Microbial Communities, Organic Matter and Surface Properties in Artificial Soils with Different Mineral Composition and Charcoal Presence**
Geertje Pronk[1]*, Doreen Babin[2], Franziska Ditterich[3], Julia Giebler[4], Katja Heister[1], Michael Hemkemeyer[5], Ellen Kandeler[3], Ingrid Kogel-Knabner[1], Yamuna Kunhi Mouvenchery[6], Christian Poll[3], Gabriele Schaumann[6], Michael Schloter[7], Kornelia Smalla[2], Annelie Steinbach[4], Christoph Tebbe[5], Lukas Wick[4] and Susanne Woche[8]
[1] Technische Universitat Munchen, Germany; [2]Julius Kuhn-Institut, Bundesforschungsinstitut fur Kulturpflanzen, Germany; [3]University of Hohenheim, Germany; [4]Helmholtz Centre for Environmental Research - UFZ, Germany; [5] Institute for Biodiversity, Germany; [6]Universitat Koblenz-Landau, Germany; [7]German Research Center for Environmental Health, Germany [8]Leibniz Universitaet Hannover, Germany

O89-2 16:50 **Soil Humic Aicd Complexation with Protein**
Wenfeng Tan[1]*, Yan Li[1], Luuk K. Koopal[2] and Willem Norde[2]
[1]Huazhong Agricultural University, China; [2]Wageningen University, Netherlands

O89-3 17:10 **Nanoparticles of FE2O3 and Zno and Microbial Interactions in Rice Rhizosphere**
Ashok Patra*, R C Yadav, Sarvender Kumar, T J Purakayashta and R Singh
Indian Agricultural Research Institute, India

O89-4 17:30 **Effect of Phenanthrene and Hexadecane on the Release alnd Transport of Mobile Organic Matter in Soil - a Two Layer Column Study**
Katharina Reichel[1], Doreen Babin[2], Marc-Oliver Gobel[3], Armin H. Meyer[4], Kai Uwe Totsche[1]* and Kornelia Smalla[2]*
[1] Friedrich Schiller University Jena, Germany; [2] Julius Kuhn-Institut Braunschweig, Germany; [3]Leibniz University Hannover, Germany; [4]Helmholtz Zentrum Munchen, Germany

O89-5 17:50 **Microbial Utilization of Free Versus Sorbed Pyruvate Investigated by Positon-specific 13C and 14C Labeling and 13C-Plfa Analysis**
Carolin Apostel*, Michaela Dippold and Yakov Kuzyakov
Georg-August University of Goettingen, Germany

Oral Session No. 90

Samda (3F)

[C1.4-2] The Progress in Development and Harmonization of Soil Classifications

June 13 (Fri), 16:20 - 18:10

Convenor: Sergey Goryachkin (Russian Academy of Science, Russia)/ Yeon Kyu Sonn (NAAS, Korea)

O90-1 16:20 **Proposed Soil Taxonomy Changes for Gelisols and Other Soils with Gelic Materials**
J.G. Bockheim[1], C.I. Ping[2], D.W. Smith[3]*, J.W. Hempel[3] and T.G. Reinsch[3]
[1] University of Wisconsin, USA; [2]University of Alaska-Fairbanks, USA; [3]USDA, Natural Resources Conservation Service, USA

O90-2 16:50 **Soils with High Activity Clay and High CEC in Acre State, Amazon Region**
Lucia Helena Cunha Dos Anjos[1]*, Marcos Gervasio Pereira[2] and Paulo Guilherme Salvador Wadt[3]
[1] Federal Rural University of Rio de Janeiro, UFRRJ, Brazil; [2]UFRRJ, Brazil; [3]Embrapa Acre, Brazil

O90-3 17:10 **The Method of Development and Structure of the Modernized Hungarian Soil Sclassification System**
Erika Micheli[1]*, Marta Fuchs[1], Vince Lang[1], Tamas Szegi[1] and Endre Dobos[2]
[1] Szent Istvan University, Hungary; [2]University of Miskolc, Hungary

O90-4 17:30 **Developing a Simplified Guide to Soil Taxonomy**
Michel Ransom[1], Cameron Loerch[2], Kim Kerschen[1], John Galbraith[3], David Weindorf[4], Curtis Monger[5], Joseph Chiaretti[2], Craig Ditzler[2], Micheal Golden[2], David Smith[2]* and Kenneth Scheffe[2]
[1]Kansas State University, USA; [2]USDA Natural Resources Conservation Service, USA; [3]Virginia Tech, USA; [4]Texas Tech University, USA; [5]New Mexico State University, USA

O90-5 17:50 **Explore the Secrecy in the Distribution of Red and Yellow Soil on the Earth**
Zhongjie Ye[1]* and Liqun Xu[2]
[1]Zhejiang A&F University, China; [2]Zhejiang Forestry Administration, China

Oral Session No. 91

401 (4F)

[DS5] Soil Health: Key to Food Security

June 13 (Fri), 16:20 - 18:10

Convenor: Yong Sik Ok (Kangwon National University, Korea)/ M.B. Kirkham (Kansas State University, USA)/ Nanthi Bolan (University of South Australia, Austrailia)/ Sang Soo Lee (Kangwon National University, Korea)

O91-1 16:20 **Environmental Geochemistry and Health, with Special Reference to Food Contaminants**
Ming H. Wong*
Hong Kong Institute of Education, Hong Kong

O91-2 16:40 **Heavy Metal Contamination of Soils: A Global Challenge to Food Security**
Zhenli He[1]*, Xiaoe Yang[2] and Virupax C Baligar[3]
[1]University of Florida, USA; [2]Zhejiang University, China; [3]USDA-ARS, USA

O91-3 16:53 **Soil at the Nexus of Food Security, Climate, and Sustainability**
Charles William Rice
Kansas State University, USA

O91-4 17:06 **Soil the Next Step Nexus for Global Existential Environmental Challenges**
Damien Field*, Alex Mcbratney and Budiman Minasny
The University of Sydney, Australia

O91-5 17:19 **Movement of Heavy Metals from Soil to Human Food Chain and Risk Assessment**
Xiao-E Yang[1]*, Wendan Xiao[1], Mahamad Tarig[1] and Zhenli He[2]
[1]Zhejiang University, China; [2]University of Florida USA

O91-6 17:32 **Improving Soil Productivity in Dryland Agroecosystems of India by using Organic Amendments**
Ch. Srinivasarao[1]*, Rattan Lal[2], B. Venkateswarlu[1] and Nanthi. Bolan[3]
[1]Central Research Institute for Dryland Agriculture, India; [2]The Ohio State University, USA; [3]University of South Australia, Australia

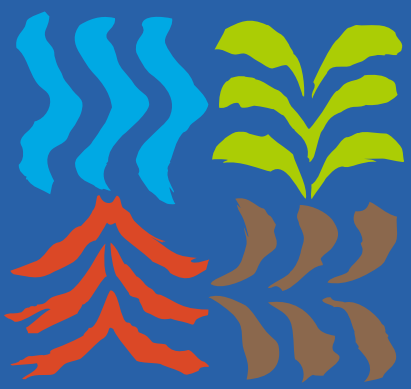
O91-7 17:45 **Phosphorus Recovery and Reuse from Waste Streams**
Rajasekar Karunanithi[1]*, Nanthi Bolan[1], Ravi Naidu[1] and Ariel Szogi[2]
[1]University of South Australia, Australia; [2]USDA ARS, USA

O91-8 17:58 **EXPO2015 Milan and Feeding Knowledge Programme: the Nexus between Land, Water, Climate Change, Biodiversity, Energy and Food Security in the Mediterranean**
Pandi Zdruli*, Nicola Lamaddalena, Todorovic Mladen, Alessandra Scardigno, Jenny Calabrese, Gaetano Ladisa and Vincenzo Verrastro
CIHEAM Mediterranean Agronomic Institute of Bari, Italy

18:10~ **Closing Ceremony (Halla , 3F)**

20th WORLD CONGRESS OF SOIL SCIENCE

In Commemoration of the
90th Anniversary of the IUSS



POSTER SESSION

- June 9 (Mon)
- June 10 (Tue)
- June 12 (Thu)
- June 13 (Fri)

- For your reference, abstracts of oral sessions are shown as group per symposium, but those of poster presentations are listed individually.
- Those who wish to cite abstracts in the proceedings of 20WCSS may refer as below since the abstract online access system does not specify the page.

* Author's Name. 2014. Title of Abstract. Symposium Name. Proceedings of the 20th WCSS (www.20wcss.org), Abstract Online Access System, June 8 to 13, Jeju, Korea.
(Example) Kim, S.Y. and V.K. Choi. 2014. Soil security and awareness. Congress Symposium 1: Soils for Peace. Proceedings of the 20th WCSS (www.20wcss.org), Abstract Online Access System, June 8 to 13, Jeju, Korea.

POSTER SESSION

June 9 (Mon), 10 (Tue),
12 (Thu), 13 (Fri) – 4 Days
15:30-16:20

June 9 (Mon) – Poster Session 1

A Zone: P1-1 ~ 194, **B Zone:** P1-195 ~ 450,
C Zone: P1-450 ~ 603

P1-1 ~ 5	[IDS1] Folk Soil Knowledge for Soil Taxonomy and Assessment
P1-6 ~ 32	[IDS4] Critical Issues of Radionuclide Behavior in Soils and Remediation
P1-33 ~ 53	[IDS10] Impact of Bioenergy Cropping on Soils and the Environment
P1-54 ~ 76	[IDS13] Integrated Management Strategies for As and Cd in Rice Paddy Environments
P1-77 ~ 194	[DS2] Soil Development and Soil Properties and Functions
P1-195 ~ 240	[DS3] Modelling of Soil Properties and Processes - Challenges and Opportunities
P1-241 ~ 258	[DS6] Soils in the Anthropocene Era: Global Health, Food Security, and Human Health
P1-259 ~ 279	[DS7] African Eco-Efficient Solutions to Food Insecurity and Climate Change
P1-280 ~ 292	[C1.1-2] Interactions between Soil Structure, Living Organism and Organic Matter
P1-293 ~ 311	[C1.3-2] Volcanic Soils: Distinctive Properties and Management
P1-312 ~ 323	[C1.4-1] Marginal Soils: The Classification of Technogenic, Subaqueous, and Extraterrestrial Soil-like Bodies
P1-324 ~ 336	[C1.5-1] Validation of Soil Carbon Sequestration
P1-337 ~ 348	[C2.2-1] Biogeochemical Reactivity of Soils and Sediments: Molecular Process Control over Material Flux at Field Scales
P1-349 ~ 369	[C2.3-1] Modern Soil Biology for N and C Transformation: From Genes to Ecosystems
P1-370 ~ 450	[C2.5-3] Mechanism Controlling Greenhouse Gas Emissions from Soils
P1-451 ~ 463	[C3.3-1] Mobilization of Essential Micronutrients by Exudates
P1-464 ~ 507	[C3.6-1] Saline and Sodic Ecosystems in the Changing World
P1-508 ~ 546	[C4.1-1] Advances in Quantifying Forest Soil Processes and Functions
P1-547 ~ 552	[C4.1-2] Environmental Management of Post-Epidemic Carcass Burial Sites
P1-553 ~ 603	[C4.1-3] Soil Ecosystem under Climate Change

June 10 (Tue) – Poster Session 2

A Zone: P2-1 ~ 199, **B Zone:** P2-200 ~ 445,
C Zone: P2-446 ~ 580

P2-1 ~ 43	[IDS3] Soil Information and Food Security
P2-44 ~ 199	[IDS5] Biochar Soil Amendment for Environmental and Agronomic Benefits
P2-200 ~ 240	[IDS6] Soil Microbial Ecology under Stress and Global Climate Change
P2-241 ~ 250	[C1.1-1] The Role of Environment on Soil formation: Morphological Indicators
P2-251 ~ 258	[C1.2-1] Pedodiversity and Ecological Services-Bridging Soil Geography and Land Use
P2-259 ~ 281	[C1.3-1] Weathering and Soil formation in Response to Environmental Changes
P2-282 ~ 290	[C1.5-2] Quantification and Application of Uncertainty in Pedometrics
P2-291 ~ 300	[C1.6] Paleopedology
P2-301 ~ 309	[C2.1-2] Biophysical Aspects of Soil Function - Exploring Soil Hidden Frontiers
P2-310 ~ 409	[C2.2-2] Soil Organic Carbon: Dynamics, Stabilization, and Environmental Implications
P2-410 ~ 419	[C2.3-3] Microbial Biodiversity and Ecosystem Functions in Volcanic Soils
P2-420 ~ 445	[C3.5-1] Water Conservation Technologies and Impacts on Sustainable Dry Land Agriculture
P2-446 ~ 491	[C3.5-2] Techniques to Manage Contaminated Arable Soils
P2-492 ~ 500	[C3.5-4] Physical Restoration of Soils
P2-501 ~ 513, P2-579	[C4.2-1] Linking forest Management and Soil Processes to Ecosystem Productivity and Functions
P2-514 ~ 522	[C4.5-1] The Soil Underfoot: Infinite Possibilities for a Finite Resource
P2-523 ~ 546	[WG4] New Approaches in Paddy Soil Management for Food Safety and Environmental Quality
P2-547 ~ 578	[WG6] Urban Soils-Properties, Functions and Evolution
P2-580	[IDS17] Surface Soil Resources Inventory and Integration: Soil Value and Erosion

POSTER SESSION

June 9 (Mon), 10 (Tue),
12 (Thu), 13 (Fri) – 4 Days
15:30-16:20

June 12 (Thu) - Poster Session 3

A Zone: P3-1 ~ 204, **B Zone:** P3-205 ~ 448,
C Zone: P3-449 ~ 589

P3-1 ~ 19	[IDS8] Soils, Land Use and Heat
P3-20 ~ 46	[IDS9] Key Processes and Factors to Mitigate Land Degradation
P3-47 ~ 59	[IDS11] Nanotechnologies in Environmental Soil Science
P3-60 ~ 100	[IDS15] Advanced Technology on Soil Remediation in Mined Lands: MIRECO Symposium
P3-101 ~ 110	[DS1] Micromorphological Answers to Palaeopedological and Polypedogenetic Questions
P3-111 ~ 171	[DS5] Soil Health: Key to Food Security
P3-172 ~ 204	[C1.2-2] Soil Data, Spatial information Systems and Interpretation Procedures
P3-205 ~ 216	[C1.4-2] The Progress in Development and Harmonization of Soil Classifications
P3-217 ~ 222	[C2.1-1] Quantifying Evaporative Fluxes from Terrestrial Surfaces
P3-223 ~ 262	[C2.1-3] Hydro-Ecological Observatories and Advances in Soil Measurements and Sensors
P3-263 ~ 339	[C2.3-2] Life in Soils - Distribution and Function of Soil Microorganisms in a Changing Environment
P3-340 ~ 353	[C2.4-1] Mineralogy and Reactivity of Soil Microsites
P3-354 ~ 356	[C2.4-3] Minerals as Regulators of Carbon Flow Through Soils
P3-357 ~ 415	[C3.3-2] Advances in Rhizosphere Regulation and Soil Nutrient Management
P3-416 ~ 448	[C3.3-3] Ecological Significance of Soil Organic Phosphorus
P3-449 ~ 477	[C3.5-3] Management and Reclamation of Mining Site Soils
P3-478 ~ 482	[C3.6-2] Salinity Management When Irrigating with Marginal Quality Waters
P3-483 ~ 506	[C4.4-1] Education and Social Awareness for Soil Science in General Public
P3-507 ~ 514	[C4.4-2] Widening the Soil Science Course to the Various Directions of Scientific and Humanistic Area
P3-515 ~ 529	[WG1] Soil Monitoring for Mankind and Environment Safety
P3-530 ~ 540	[WG2] WRB - Lessons Learned from the Development of the Third Edition 2014
P3-541 ~ 559	[WG3] Understanding Acid Sulfate Soils: The Key to Their Proper Management
P3-560 ~ 564	[WG9] Steps made toward a Universal Soil Classification
P3-565 ~ 577	[WG10] Cryosols on a Changing Planet: Properties, Processes, Regimes and Functions
P3-578 ~ 589	[WG12] Unique Contributions of Hydropedology to Integrated Soil and Water Sciences

June 13 (Fri) – Poster Session 4

A Zone: P4-1 ~ 180, **B Zone:** P4-181 ~ 430,
C Zone: P1-431~ 571

P4-1 ~ 72	[C2.2-3] Behavior and Fate of Pollutants Entering the Soil Environment
P4-73 ~ 91	[C2.4-2] Roles of Minerals as Suppliers and Regulators of Plant Nutrients
P4-92 ~ 117	[C2.5-1] Advances in Techniques to Investigate Chemical, Physical and Biological Interfaces in Soils
P4-118 ~ 139	[C2.5-2] How do Interactions with Organo-Mineral Surfaces Alter the Dynamics and Properties of Microbes and Macromolecules in Soil?
P4-140 ~ 222	[C3.2-1] Soil Erosion and Degradation on Agriculture Land
P4-223 ~ 493	[C3.3-4] Soil Management Strategy for Enhancing Crop Yields
P4-494 ~ 496	[C3.4-1] Design and Performance of Cover Systems for Landfills and Contaminated Sites
P4-497 ~ 502	[C4.5-2] Cultural Perspectives on Soils and Soil Science
P4-503 ~ 518	[WG5] Mitigating Greenhouse Gas Emissions from Rice Paddy Soils
P4-519 ~ 540	[WG8] Proximal Soil Sensing
P4-541 ~ 545	[WG11] Soil Information Exchange Standards and Systems
P4-546 ~ 571	[WG13] Progress in Digital Soil Mapping and GlobalSoilMap

Poster Session 1 (P1)

June 9 (Mon)

IDS1: Folk Soil Knowledge for Soil Taxonomy and Assessment

Soil Art *Featured artist: Myriel Milicevic and Ruttikorn Vuttikorn, Germany and Thailand, http://neighbourhoodsatellites.com/stories-from-the-hills/index.html*

P1-1 **Characterization and Classification of Soils in Mexicali Valley, Baja California, Mexico**
Monica Aviles-Marin[1]*, Roberto Soto-Ortiz[1], Angel Lopez-Lopez[1], Victor Cardenas-Salazar[1], Angel Faz-Cano[2], Earl Alexander[3], Jesus Roman-Calleros[1], Isabel Escobosa-Garcia[1] and Fernando Escobosa-Garcia[1]
[1] Autonomous University of Baja California, Mexico; [2] Technical University of Cartagena, Spain;[3] Concord CA, USA

P1-2 **Relationship between Phytophysiognomy and Classes of Wetland Soil of Northern Pantanal Mato Grosso - Brazil**
Leo Adriano Chig[1]*, Eduardo Guimaraes Couto Eduardo Couto[2] and Catia Nunes Da Cunha Catia Nunes[2]
[1] University of Cuiaba, Brazil; [2] Universidade Federal De Mato Grosso, Brazil

P1-3 **Use of Sig Tools in the Treatment of Data and Study of the Relationship between Soil, Geology and Geomorphology in the Basin of the Ribeirao Jardim, Distrito Federal, Brazil**
Luiz Felipe Moreira Cassol, Marilusa Pinto Coelho Lacerda, Deborah Christina Moraes Mesquita, Guilherme Queiroz Micas, Manuel Pereira De Oliveira Junior, Bruna Goncalves Vieira and Henrique Sousa Honorato
Universidade de Brasilia, Brazil

P1-4 **Farmer's Knowledge of Land and Classes of Corn of Michoacan, Mexico**
Maria Alcala De Jesus, Rogelio Garcia Rangel and Juan Carlos Gonzalez Cortes
Universidad Michoacana de San Nicolas de Hidalgo, Mexico

P1-5 **Soil Mass Balance for an Alfisol in Greece**
Pantelis E. Barouchas[1] and Nicolas Moustakas[2]*
[1] Technological Educational Institute of Western Greece, Greece; [2] University of Athens, Greece

IDS4: Critical Issues of Radionuclide Behavior in Soils and Remediation

Soil Art *Featured artist: Center for Land Use Interpretation, USA, www.clui.org*

P1-6 **Aging Effects on Transfer Factor of CS-137 from Drinking Water Treatment Sludge to a Leaf Vegetable**
Nobuyoshi Ishii*, Keiko Tagami and Shigeo Uchida
National Institute of Radiological Science, Japan

P1-7 **Differential Responses of Drought Induced Reduction in Growth Rate, Plant Radio-Cesium Uptake and Distribution between the Tolerant and Sensitive Blackgram Species (vigna Mungo)**
Khin Thuzar Win, Aung Zaw Oo, Akimi Terasaki, Han Phyo Aung, Yokoyama Tadashi and Sonoko Dorothea Bellingrath-Kimura*
Tokyo University of Agriculture and Technology, Japan

P1-8 **Distribution Coefficients (kd) for Cs-137 in Highly Weathered Soils**
Guilherme Sobrinho[1]*, Maria Angelica Wasserman[2] and Luis Bellido[1]
[1] Instituto de Radioprotecao e Dosimetria (IRD/CNEN), Brazil; [2] Instituto de Engenharia Nuclear (IEN/CNEN), Brazil

P1-9 **Radiocesium Interception Potential and 137CS Concentration in Particle-Size Fractions of Soil**
Hirofumi Tsukada[1]*, Akira Takeda[2], Noriko Yamaguchi[3], Atsushi Nakao[4] and Kenji Ohse[1]
[1] Fukushima University, Japan;[2] Institute for Environmental Sciences, Japan;[3] National Institute for Agro-environmental Sciences, Japan;[4] Kyoto Prefectural University, Japan

P1-10 **Mitigation of Radioactive Contamination from Farmland Environment and Agricultural Products**
Takuro Shinano, Takeshi Ota and Hiroyuki Kobayashi
NARO Tohoku Agricultural Research Center, Japan

P1-11 *(Moved to O4-6)* **Layer-To-Layer Variations of 137cs Content in Soil throughout a Calendar Year within the Alienation Zone of the Chernobyl Npp**
Nataliia Zarubina
Institute for Nuclear Research of National Academy of Science of Ukraine, Ukraine

P1-12 **Using a Collection of Soil Monoliths for the Study of Natural Radiation of Soils in Russia**
Elena Mingareeva and Margaret Lasareva*
The Dokuchaev Central Soil Science Museum, Russia

P1-13 **Model-Based Estimation of Inhibitory Effect of Potassium Application on Cs-137 Uptake by Rice**
Shigeto Fujimura[1]*, Nobuharu Kihou[2], Junko Ishikawa[1], Yukio Suzuki[3], Takashi Saito[3], Mutsuto Sato[3] and Hideki Washio[4]
[1] NARO Tohoku Agricultural Research Center, Japan;[2] National Institute for Agro-Environmental Sciences, Japan;[3] Fukushima Agricultural Technology Centre, Japan;[4] Miyagi Prefectural Furukawa Agricultural Experiment Station, Japan

P1-14 **Relationships between Radiocesium Interception Potential (rip) and Soil Properties**
Noriko Yamaguchi[1]*, Yusuke Takata[1], Kazunori Kohyama[1], Hirofumi Tsukada[2], Akira Takeda[3] and Ichiro Taniyama[1]
[1] National Institute for Agro-environmental Sciences, Japan;[2] Fukushima University, Japan;[3] Institute for Environmental Sciences, Japan

P1-16 **Natural Radionuclide Measurements in Soil Samples from Tanke-Ilorin, North-Central Nigeria**
Levi Nwankwo* and Olalekan Olubo
University of Ilorin, Nigeria

P1-17 **Development of Low-Level-Radiocesium Concentration Analysis System for Irrigation Water Using Solid Phase Extraction Disks**
Hiroaki Yamaguchi[1]*, Seiichi Ota[1] and Hirofumi Tsukada[2]
[1] Sumitomo 3M Limited, Japan;[2] Fukushima University, Japan

P1-18 **Correlation between Soil Properties and Radioactive Cesium Absorption by Legume Crops**
Sayaka Motojima, Naoki Harada* and Masanori Nonaka
Niigata University, Japan

P1-19 **The Vertical Distribution of Cs-137 in Bavarian Forest Soils**
Joerg Voelkel, Jennifer Winkelbauer and Matthias Leopold
Technische Universitat Muenchen TUM, Germany

P1-20 **Rice Fields can be Affected by Radiocesium in Irrigation Water Originating from Forested Mountain Areas**
Naoki Harada*, Natsuki Yoshikawa, Shohei Miyamoto, Ryota Yoshizawa, Hitomi Obara, Marie Ogasa, Susumu Miyazu and Masanori Nonaka
Niigata University, Japan

P1-21 **Adsorption Rate of Dissolved Radiocesium in Water onto Soil**
Yasukazu Suzuki[1]*, Shigeto Fujimura[2], Takao Yabuki[3], Kunio Yoshioka[3] and Kazuyuki Inubushi[1]

[1] Chiba University, Japan; [2]NARO Tohoku Agricultural Research Center, Japan; [3]Fukushima Agricultural Technology Centre, Japan

P1-22 **Effects of Differences in Land Use on the Radiocesium Vertical Distribution in Soil Profile after Fukushima Daiichi Nuclear Power Plant Accident**
Tomoya Suda, Kenji Tamura, Junko Takahashi*, Hiroaki Kato, Ryo Matsumura and Onda Yuichi*
University of Tsukuba, Japan

P1-23 **Prediction of Radiocesium Concentration in Brown Rice Based on the Water-Soluble Potassium Ion Concentration in the Soil and the Potassium Ion Concentration in the Soil Solution**
Takashi Saito[1]*, Kazuhira Takahashi[1], Tomoyuki Makino[2], Takeshi Ota[3] and Kunio Yoshioka[1]
[1] Fukushima Agricultural Technology Centre, Japan;[2] National Institute for Agro-Environmental Sciences, Japan; [3] NARO Tohoku Agricultural Research Center, Japan

P1-24 **Terrestrial Gamma Radiation Dose and its Relationship with Soil Ph Level in Seri Gading Industrial Area, Batu Pahat District, Malaysia.**
Saffuwan Mohamed Johar* and Zaidi Embong
Universiti Tun Hussein Onn Malaysia, Malaysia

P1-25 **Effects of Decontamination and Potassium Fertilization on Radiocesium Concentrations in Rice and Vegetables Cultivated in Evacuation Area at Okuma Town, Fukushima**
Kenji Ohse[1]*, Kyo Kitayama[1], Yoshiyuki Takeuchi[2], Kencho Kawatsu[1] and Hirofumi Tsukada[1]
[1] Fukushima University, Japan;[2] Okuma Town office, Japan

P1-26 **Development of a Device for Measuring the Vertical Distribution of Radioactivity in Soil Using Geiger-Muller Tubes**
Shinya Suzuki
The University of Tokyo, Japan

P1-27 **Challenge in Remediation of Agricultural Soil Contaminated by Radioceasium in Fukushima, Japan**
Masaru Mizoguchi
Unversity of Tokyo, Japan

P1-28 **Dynamics of Radioactive Cesium at Paddy Fields in Lower Basin of Agano-River, Niigata, Japan**
Tadao Aoda
Niigata University, Japan

P1-29 **Plot-Scale Spatial Variability of Radioactive Cesium Profile in Contaminated Paddy Soil in Fukushima**
Shuichiro Yoshida* and Hiroaki Yamano
The University of Tokyo, Japan

P1-30 **Seasonal Changes in Soil Radiocesium Distribution in Rice Fields and their Effect on Rice**
Naoki Harada[1]*, Ryosuke Shoji[1], Yusuke Katagiri[1], Kenro Okumura[2], Natsuki Yoshikawa[1] and Masanori Nonaka[1]
[1]Niigata University, Japan;[2] The Recovery Conference of Oota Area, Japan

P1-31 *(Moved to O4-7)* **Estimation of Radiocesium In/out Flows in Paddy Fields in Fukushima, Japan**
Seiko Yoshikawa[1]*,Eguchi Sadao[1],Itahashi Sunao[1],Igura Masato[1],Nobuharu Kihou[1],Shigeto Fujimura[2],Takashi Saito[3], Hideshi Fujihara[1],Shinichiro Mishima[1],Kazunori Kohyama[1], Noriko Yamaguchi[1] and Ohkoshi Satoru[3]
[1] National Institute for Agro-environmental Sciences, Japan;[2] National Agriculture and Food Research Organization, Japan;[3] Fukushima Agricultural Technology Centre, Japan

P1-32 **Soil-To-Plant Transfer Factors of Cs-137 for the Korean Diet and their Potential Use after a Nuclear Accident**
Yong-Ho Choi*, Kwang-Muk Lim, Byung-Ho Kim and Dong-Kwon Keum
Korea Atomic Energy Research Institute, Korea

IDS10: Impact of Bioenergy Cropping on Soils and the Environment

Soil Art *Featured artist: Georg Dietzler, Germany, www.dietzlerge.org*

P1-33 **Soil Carbon and Nitrogen Affected by Perennial Grass, Cover Crop, and Nitrogen Fertilization**
Upendra Sainju[1], Bharat Singh[2] and Hari Singh[2]
[1] USDA, Agricultural Research Service, USA;[2] Fort Valley State University, USA

P1-34 **Soil Carbon Sequestration And Soil Aggregation Affected by Perennial Energy Crops**
D.K. Lee[1]*, Vance Owens[2], James Doolittle[2] and Arvid Boe[2]
[1]University of Illinois at Urbana-Champaign, USA;[2] South Dakota State University, USA

P1-35 **Growth Responses and Accumulation of Cadmium in Energy Crops: Switchgrass (panicum Virgatum L.) and Prairie Cordgrass (spartina Pectinata L.)**
Chaolan Zhang[1], Guo Jia[2], Thapa Santanu[2] and Lee Dokyoung[2]*
[1] Guangxi University, China;[2] University of Illinois, USA

P1-36 **Soil Carbon Sequestration on Conservation Reserve Program (crp) Lands Managed for Bioenergy Feedstock Production**
James Doolittle[1]*, Vance Owens[1], Arvid Boe[1] and Dokyoung Lee[2]
[1] South Dakota State Univeristy, USA;[2] University of Illinois, USA

P1-37 **Environmental Impact of Bioenergy Landscapes in the United States**
Tara Hudiburg[1], William Parton[2], Melannie Hartman[2], Madhu Khanna[1], Weiwei Wang[1], Stephen Long[1] and Evan Delucia[1]
[1] University of Illinois, USA;[2] Colorado State University, USA

P1-38 **Does Nitrogen Fertilization Effect Biomass Yield, Nitrate Leaching, or Greenhouse Gas Emissions in Illinois-Produced Miscanthus X Giganteus?**
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[1] Department of Environment and Primary Industries, Australia;[2] University of Melbourne, Australia;[3] Murdoch University, Australia

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[1] Brazilian Agricultural Research Corporation (EMBRAPA), Brazil;[2] University of Florida, USA;[3] Sao Paulo State University (UNESP), Brazil

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[1] Islamic Azad university, Iran;[2] Tehran University, Iran;
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Institute of Eco-Environmental and Soil Sciences, China

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[1]Ghent University, Belgium; [2]Federal University of Pelotas, Brazil

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Raisa Makarevich*
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[1] Northwest A&F University, China;[2] Chinese Academy of Science, China

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[1] Universiti Malaysia Sabah, Malaysia;[2] Universiti Putra Malaysia, Malaysia

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[1] Cantho University, Viet Nam;[2] Katholieke Universiteit Leuven (K.U.Leuven), Belgium

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[1] Samarkand State University, Uzbekistan;[2] Samarkand Agricultural Institute, Uzbekistan

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Tulkin Ortikov
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[1] Samarkand State University, Uzbekistan;[2] Samarkand Agricultural Institute, Uzbekistan

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Beata Houskova
Soil Science and Conservation Research Institute Bratislava, Slovakia

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Pukyong National University, Iran

P1-240 **Development of Estimation Method for Crop Yield Using Modis and Process-Based Model in US Corn Belt Region**
Jihye Lee[1], Sinkyu Kang[1]*, Keunchang Jang[1], Jonghan Ko[2] and Sukyoung Hong[3]
[1]Kangwon National University, Korea; [2]Chonnam National University, Korea; [3]Rural Development Administration, Korea

DS6: Soils in the Anthropocene Era: Global Health, Food Security, and Human Health

Soil Art *Featured Artist: Bonnie Ora Sherk, Living Library, USA, www.alivinglibrary.org*

P1-241 **Participatory Soil Health Management and Food Security in Hundred Climate Vulnerable Districts of India**
Ch. Srinivasarao*, V. Girija Veni, Y. Sudha Rani, S. Dixit and B. Venkateswarlu
Central Research Institute for Dryland Agriculture, India

P1-242 **Correlation Studies On Secondary Nutrients and Soil Properties in Soils Under Rubber Plantations in Cameroon**
Njukeng Nkengafac, Samalang Patrick and Ehabe Eugene
Institute of Agricultural Research for Development (IRAD), Cameroon

P1-243 **Soil Phosphorus Fractionation of Two Oil Palm Fields with Different Planting Age in Pahang, Malaysia**
Ngai Paing Tan[1]*, Yusufujiang Yusuyin[1], Mum Keng Wong[2], Arifin Abdu[3], Kozo Iwasaki[4] and Sota Tanaka[4]
[1] Ehime University, Japan; [2]Felda Agricultural Services Sdn. Bhd., Malaysia; [3]Universiti Putra Malaysia, Malaysia; [4]Kochi University, Japan

P1-244 **Chemical and Leaching Characteristics of Lead Smelting Slags from Four Open Contaminated Sites in Nigeria**
Mary Ogundiran[1]*, Henk Nugteren[2] and G Witkamp[2]
[1]University of Ibadan, Nigeria; [2]Delft University of Technology, Netherlands

P1-245 **Partitioning of Different Elements to Solid and Liquid Separates with Solid-Liquid Separation of Swine Slurry Using Different Separation Techniques**
Darshani Kumaragamage[1]*, Wole Akinremi[1], Lorne Grieger[2] and Geza Racz[1]
[1]University of Winnipeg, Canada; [2]Prairie Agricultural Machinery Institute, Canada

P1-246 **Studies on Application of High Se and Co Alfalfa Forage on Animal Production**
Guo Xiao[1], Jie Xiao Lei[2]* and Hu Hua Feng[1]
[1]Henan Animal Husbandry and Economy, China; [2]Huanghuai University, China

P1-247 **Studies on Growth Characteristics and Productivities of Mixed Sowing Forage Plants**
Shen Yong Shu[1], Guo Xiao[1] and Jie Xiao Lei[2]*
[1] Henan Animal Husbandry and Economy, China; [2] Huanghuai University, China

P1-248 **Migration Effect of Selenium in Soil-Grass System**
Hu Hua Feng[1], Jie Xie Lei[2]* and Guo Xiao[1]
[1]Henan Animal Husbandry and Economy, China; [2] Huanghuai University, China

P1-249 **Value Adding of Animal Wastes to Reduce Environmental Liabilities and for the Improvement of Soil Health**
Gina Villegas Pangga* and Sambo Pheap
University of the Philippines Los Banos, Philippines

P1-250 **Postagrogenic Dynamic of Soils on Abandoned Croplands of Cryolithozone**
Elena Mamaeva and Roman Desyatkin
Institute for Biological Problems of Cryolithozone SB RAS, Russia

P1-251 **Forestry Species Effects on the Characteristics of the Poor South-Eastern Soils of Nigeria**
Olanrewaju Bello* and Bassey Etim
University of Calabar, Nigeria

P1-252 **Soil Properties, Their Impact On Citrus Tree Loss and Their Management.**
Okafor B.N[1], Akinbola G.E[2] and Olaniyan A.A[1].
[1]National Horticultural Research Institute, Nigeria; [2]University of Ibadan, Nigeria

P1-253 **A Study on the Cadmium Sorption by Two Different Humic Acids: Effect of Ionic Strength on Cadmium Sorption and Description of Isotherm Data by Different Empirical Models**
Sara Molaaliabasiyan* and Hassan Tofighi
University of Tehran, Iran

P1-254 **A Study on the Cadmium Sorption by Two Different Humic Acids: Effect of Ph on the Cadmium Sorption**
Hassan Tofighi and Sara Molaaliabasiyan*
University of Tehran, Iran

P1-255 **The Attribution Study on Salinisation Soils in Northern Hebei Based on Chinese Soil Taxonomy**
Jun Li, Huaiyu Long* and Qiuliang Lei
Chinese Academy of Agricultural Sciences, China

P1-256 **Land Use Conversion and Soils Degradation in a Lowland Tropical Landscape of Papua New Guinea**
Nangu George, Rajashekhar Rao B.K. and David Lopez Cornelio*
PNG University of Technology, Papua New Guines

P1-257 **Variation in Heavy Metal Accumulated in the Edible Part of Nine Different Crop Plants and Their Response to the Changes in Phytoavailable Metal Pools in Soil**
Byoung-Hwan Seo[1], Ga-Hee Lim[2], Junsik Bae[1], Kye-Hoon Kim[2] and Kwon-Rae Kim[1]*
[1]Gyeongnam National University of Science and Technology, Korea; [2]University of Seoul, Korea

P1-258 **Variation in Heavy Metal Accumulated in the Roots of Eleven Different Medicinal Plants and Their Bioconcentration Factors**
Junsik Bae[1], Byoung-Hwan Seo[1], Won-Il Kim[2] and Kwon-Rae Kim[1]*
[1]Gyeongnam National University of Science and Technology, Korea; [2]National Academy of Agricultural Science, Korea

DS7: African Eco-Efficient Solutions to Food Insecurity and Climate Change

Soil Art *Featured artist: Helen Lessick, USA and Kenya, www.hatchfund.org/project/soil_sample_kenya/about*

P1-259 **Establishing Environmentally Safe N Fertilizer Rates in a Dystric Leptosol Using Castor (ricinus Communis L.) as a Test Crop**
Martin Anikwe*
Enugu State University of Science and Technology, Nigeria

P1-260 **Fertility Capability Classification of Soils of the Sokoto-Rima Flood Plain, Nigeria**
Adamu Alhaji Yakubu[1]*, Saminu, A. Ibrahim[2], Abayomi, J. Ojanuga[3] and Ajit Singh[3]
[1]Ahmadu Bello University Zaria, Nigeria; [2]Abubakar Tafawa Balewa University Bauchi, Nigeria; [3]Usmanu Danfodiyo University Sokoto, Nigeria

P1-261 **Wet Lands' Valorisation with Oil Palm: A Response to Land Scarcity and Rainfall Rarefaction in Southern Cote D'ivoire**
N'guessan Alphone Kouassi*
Centre National de Recherche Agronomique (CNRA), Ivory Coast

P1-262 **An Innovative Eco-Garden System for Sustainable Food Crop Production for Resource-Poor Households in South Africa**
Simeon Materechera[1] and Dolph Swanepoel[2]
[1]Science & Technology North West University (Mafikeng Campus), South Africa; [2]NEWSTART Eco-Gardens (Pty) Ltd, South Africa

P1-263 **Using Conservation Agriculture to Intensify and Stabilize Agricultural Production in Southern Africa**
Neal Eash*, Dayton Lambert, Deb O'dell, Forbes Walker and Jaehoon Lee
The University of Tennessee, USA

P1-264 **Sustainable and Efficient Land Management Practices in the Sahel**
Hitoshi Shinjo[1]*, Kenta Ikazaki[2], Shinsuke Imanaka[1], Ueru Tanaka[3], Keiichi Hayashi[4], Satohi Tobita[4] and Takashi Kosaki[2]
[1]Kyoto University, Japan; [2]Tokyo Metropolitan University, Japan; [3]Research Institute for Humanity and Nature, Japan; [4]Japan International Research Center for Agricultural Sciences, Japan

P1-265 **Short-Term Effects of Compost and N-Fertilizer Inputs on Maize Performance and Nutrient Uptake in Agroforestry Parklands of Burkina Faso, West Africa**
Zacharia Gnankambary[1]*, Georges Zomboudre[1], Gert Nyberg[2], Ilstedt Ilstedt[2], Boubie Vincent Bado[3], Victor Hien[1] and Anders Malmer[2]
[1]Institute for Environment and Agricultural Research (INERA), Burkina Faso; [2]Swedish University of Agricultural Sciences, Sweden; [3]Africa Rice, Senegal

P1-266 **The Position of Acessibility to Fertilizer in Farming Activities in the Sub Saharan Africa Region: A Case Study of the Nigerian Rural Areas**
Babagana Abubakar*
Administration and operations, Seabed International, Nigeria

P1-267 **Sahel Development through Lands Capabilities Surviving in Harsh Conditions**
Rokhaya Fall[1] and Lucas Montena[2]*
[1] FAO, Senegal; [2]JRC EUROPA, Italy

P1-268 **Indigenous African Soil Enrichment as Climate-Smart Sustainable Agriculture Alternative**
Dawit Solomon[1]*, Johannes Lehmann[1], James Angus Fraser[2], Melissa Leach[3], Kojo Amanor[4], Søren Munch Kristiansen[5] and James Fairhead[3]
[1]Cornell University, USA; [2]Lancaster University, United Kingdom; [3]University of Sussex, United Kingdom; [4]University of Ghana, Ghana; [5]Aarhus University, Denmark

P1-269 **Relationships Between Soil Fetility Indicators and Toposequence: in the Soudano Sahelian Area : Case of the Watershed of Koutango in the Southern Peanut Basin of Senegal**
Mateugue Diack[1]*, Macoumba Loum[1], Fary Diome[2] and Khady Sow[3]
[1]Universite Gaston Berger, Senegal; [2]Universite Cheikh Anta Diop, Senegal; [3]Agence Nationale du Conseil Agricole et Rural, Senegal

P1-270 **Effect of Application Method and Quality of Crop Residues on Soil Nitrogen Dynamics in Maize Croplands With Contrasting Soil Textures in Tanzania.**
Tomohiro Nishigaki[1]*, Soh Sugihara[1], Method Kilasara[2] and Shinya Funakawa[1]
[1] Kyoto University, Japan; [2]Sokoine University of Agriculture, Tanzania

P1-271 **Assessing the Long Term Sustainability of Fertilizer Micro-Dosing in the Sahel**
Saidou Koala[1], Job Kihara[1], Rolf Sommer[1], Derek Peak[2], Anthony Kimaro[2] and Isaac Savini[1]
[1]International Center for Tropical Agriculture (CIAT), Kenya; [2]University of Saskatoon, Canada

P1-272 **Effect of Organic and Inorganic Fertilizers on Potassium Status, Uptake and Yield of Sweet Potato (ipomea Batatas (l) Lam) in an Ultisol in South Eastern Nigeria**
Damian Asawalam[1]* and Edward Nwaogu[2]
[1]Michael Okpara University of Agriculture, Nigeria; [2] National Root Crops Research Institute, Nigeria

P1-273 **Effects of Organic Manures and Urea on Soil Properties, Nutrient Uptake and Yield of Amaranthus Cruentus in a Rainforest Ultisol in Nigeria**
Asawalam, D. O.[1] and Iren, O. B.[2]
[1]Michael Okpara University of Agriculture, Nigeria; [2]University of Calabar, Nigeria

P1-274 **Soil: The Forgotten Resource of Africa. The Need For Policy Relevant Assessments of the State of Soil Across Africa.**
Arwyn Jones
European Union Joint Research Centre, Italy

P1-275 **Long-Term Effects Prescribed Burning and Livestock Exclosure Management on Soil Carbon in Dry Savanna Ecosystems of Africa**
Ermias Aynekulu[1]*, Jonas Koala[2], Kenea Feyissa[3], Louis Sawadogo[2], Jan De Leeuw[1] and Keith Shepherd[1]
[1]World Agroforestry Centre (ICRAF), Kenya; [2]INERA, Burkina Faso; [3]Hawassa University, Ethiopia

P1-276 **Crusting and Mode of Seedling Emergence as Affected By Rainfall Intensity in Some Quartz Dominated South African Soils**
Adornis Dakarai Nciizah and Isaiah Wakindiki*
University of Fort Hare, South Africa

P1-277 **Crust Formation, Infiltration and Erosion in Some South African Soils**
Isaiah Wakindiki* and Adornis Nciizah
University of Fort Hare, South Africa

P1-278 **Use of Farmer Indigenous Knowledge to Strengthen Soil and Water Management Skills by Farmers in an Irrigation Scheme in Nigeria**
Bashir Sani*, Yusuf Abdullahi, Ibrahim Sambo, Aliyu Yari, Adamu Yakubu and Ismail Ibrahim
Ahmadu Bello University, Nigeria

P1-279 **Sustainability of Crop Residue Allocation Options in Smallholder Cereal-Legume-Livestock Farms in the Dry Savannas of West Africa**
Andrews Opoku[1]*, Robert Abaidoo[2], Ebenezer Safo[1], Emmanuel Iwuafor[3], Maman Nouri[4] and Naaminong Kabo[5]
[1]KNUST, Ghana; [2]International Institute of Tropical Agriculture (IITA), Ghana; [3]Institute for Agricultural Research Nigeria, Nigeria; [4]Institut National de Recherches Agronomiques du Niger, Niger; [5]Animal Research Institute, Ghana

C1.1-2: Interactions between Soil Structure, Living Organism and Organic Matter

Soil Art *Featured artist: Jackie Brookner, ECOLOGICAL ART + DESIGN, USA, jackiebrookner.com*

P1-280 **Interactions of Soil Structure and Soil Organic Matter in Paddy Soil and Upland Soil under Long-Term Fertilization**
Xinhua Peng[1]*, Hu Zhou[1] and Xiong Yan[2]
[1] Institute of Soil Science, CAS, China; [2]Hunan Agricultural University, China

P1-281 **Effect of the Fresh Waste Mushroom Beds of pleurotus Ostreatus on the Microstructure and the Physico-Chemical Properties of Soil in Brazil**
Hiroko Nakatsuka[1]*, Masato Oda[2], Yukimi Hayashi[3], Junko Takahashi[1] and Kenji Tamura[1]
[1]University of Tsukuba, Japan; [2]Japan International Research Center for Agricultural Sciences, Japan; [3]Sitio TKM, Brazil

P1-282 **How Soil and Sediment Features affect the Growing and Vitality Conditions of Populus Euphratica?**
Christian Opp[1], Andreas Ginau[2], Zhandong Sun[3] and Umut Halik[4]
[1] University of Marburg, Germany;[2] University of Frankfurt, Germany;[3] Chinese Academy of Science, China;[4] Xinjiang University, China

P1-283 **Microscopic Genesis Diagnosis of the Desert Varnish and Biogenic Crusts in Arid Soils of Central Asia**
Marina Lebedeva[1]* and Vasilii Shishkov[2]
[1] V.V. Dokuchaev Soil Science Institute, Russia; [2]Institute of Geography, Russia

P1-284 **Does Rhizosphere and Litter Diversity Mediate the Biogeochemistry of Restoration Soils?**
Hongtao Zhong*, Young-Nam Kim, Carol Smith, Brett Robinson and Nicholas Dickinson
Lincoln University, New Zealand

P1-285 **Biogeochemical Role of Native and Exotic Earthworms in New Zealand Soil**
Young-Nam Kim[1]*, Hong-Tao Zhong[1], Keum-Ah Lee[2], Stephane Boyer[1], Brett Robinson[1] and Dickinson Nicholas[1]
[1]Lincoln University, New Zealand; [2]University of Canterbury, New Zealand

P1-286 **Soil Macroaggregate Self-Assemble as a Feedback to Process "Macroaggregates Breakdown by Tillage"**
Vladimir Kholodov and Nadezhda Yaroslavtseva
Dokuchaev Soil Science Institute, Russia

P1-287 **Functional Groups of Organic Matter in Soils Podzolization - Upper Negro River Basin- Amazon**
Bruna Rossin[1], Debora Mendes[2], Felipe Guimaraes[2], Nadia Regina Do Nascimento[3] and Guilherme Taitson Bueno[2]
[1] UNESP, Brazil; [2] PUC-Minas, Brazil; [3]Deplan, Unesp, Brazil

P1-288 **Forest Humus Forms, Carbon and Nitrogen Stocks in Boreo-Nemoral Ecotone**
Imants Kukuls* and Zane Zigure
University of Latvia, Latvia

P1-289 **The Spatial Distribution Pattern of Soil-Dwelling Termites in Primary Forest and Oil Palm Plantation in Sabah, Malaysia**
Mum Keng Wong[1]* and Homathevi Rahman[2]
[1]Felda Agricultural Services Sdn Bhd, Malaysia; [2]Universiti Malaysia Sabah, Malaysia

P1-290 **Effects of Different Organic Materials on Fractal Features of Micro Aggregate and Available Nutrients in Chao Soil**
Li Teng, Rao Wei, Wang Daichang*, Liu Shiliang, Han Yanlai and Zhu Yuenji
Henan Agricultural University, China

P1-291 **Net Effect of Liming on Soil Organic Carbon Stocks: A Review**
Remigio Paradelo[1], Inigo Virto[2] and Claire Chenu[1]*
[1]AgroParisTech, France; [2]Universidad Publica de Navarra, Spain

P1-292 **Balance of Organic Matter in a Maize Agroecosystem**
Monika Skowronska*, Tadeusz Filipek and Paweł Harasim
University of Life Sciences in Lublin, Poland

C1.3-2: Volcanic Soils: Distinctive Properties and Management

P1-293 **Phosphorus-Arsenic Interactions in Volcanic-Ash Soils in Relation to Arsenic Mobility and Bioavailability**
Santiago Mahimairaja[1] and Nanthi Bolan[2]*
[1]Tamil Nadu Agricultural University, India; [2]University of South Australia, Australia

P1-294 **Distribution, Properties, and Genesis of Nonallophanic Andosols in Central Kyushu, Japan**
Hideo Kubotera[1]*, Takashi Kusaba[2], Takeo Shima[2] and Iwao Shishibe[3]
[1]NARO Agricultural Research Center, Japan; [2]NARO Kyushu Okinawa Agricultural Research Center, Japan;[3] Oita Prefectural Agriculture, Japan

P1-295 **Significance of Aluminum-Humus Complexes in Andosols**
Tadashi Takahashi*
Tohoku University, Japan

P1-296 **Exhuming Buried Allophanic Soil Horizons and Mixing Them with Vitrands in Central North Island, New Zealand: Impacts on Soil Moisture Availability**
Laubscher Nadia, Megan R Balks* and David J Lowe
University of Waikato, New Zealand

P1-297 **Elemental Composition of Agricultural Soils in Japan in Relation to the Genesis and Inherent Fertility of The Soils**
Junta Yanai*, Hidekazu Yamada and Atsushi Nakao
Kyoto Prefectural University, Japan

P1-298 **Physical and Chemical Properties of Volcanic Ash Influenced Soils on Mount Rainier, Washington, Usa**
Phil Roberts*
USDA-NRCS, USA

P1-299 **Effect of Organic Matter Application and Conventional Tillage on Soil Organic Carbon Content of a Volcanic Ash Soil in West Java, Indonesia**
Wiwik Hartatik[1]*, D. Setyorini[1], N. Sumarni[2], N. Suwandi[2] and T. Sugino[3]
[1]Indonesian Soil Research Institute, Indonesia; [2]Indonesian Vegetables Research Institute, Indonesia; [3]Japan International Research Center for Agricultural Sciences, Indonesia

P1-300 **Soil Genesis and Mineralogy in Volcanic Materials in the Mediterranean Climate of California, Usa**
Randy Dahlgren[1]* and Tadashi Takahashi[2]
[1]University of California - Davis, USA; [2]Tohoku University, Japan

P1-301 **Effects of Heating on the Formation of Black Humic Acids**
Naoya Katsumi*, Koyo Yonebayashi and Masanori Okazaki
Ishikawa Prefectural University, Japan

P1-302 **Stable Isotope Analysis for Evaluating Origins and Exchangeability of Sulfate in Deep Andisols in Ibaraki and Kagoshima, Japan**
Morihiro Maeda[1]*, Daisuke Yamada[2], Hidetaka Katou[3], Ken-Ichi Osaka[4] and Hitoshi Chiba[1]
[1] Okayama University, Japan; [2]Oyo Corporation, Japan; [3] National Institute for Agro-Environmental Sciences, Japan; [4] The University of Shiga Prefecture, Japan

P1-303 **Factors Influencing Carbon Availability and Metabolic Quotients in Temperate Volcanic and Tropical Forest Soils**
Xu Xingkai*
Chinese Academy of Sciences, China

P1-304 **Volcanic Soils Attributes Affecting Forest Productivity in Japan**
Akihiro Imaya*, Shinji Kaneko and Shuichiro Yoshinaga
Forestry and Forest Products Research Institute, Japan

P1-305 **Importance of Physically Protected Organic Matter to Carbon Sequestration in Chilean Volcanic Soils**
Raul Panichini[1]*, Francisco Matus[1], Roberto Godoy[2] and Cornelia Rumpel[3]
[1] Universidad de La Frontera, Chile; [2]Universidad Austral de Chile, Chile; [3]Universite Pierre et Marie Curie, France

P1-306 *(Moved to O42-5)* **Soil Genesis and Mineralogy across a Volcanic Lithosequence in Northern California**
Stewart Wilson*, Jean-Jacques Lambert and Randy Dahlgren
University of California-Davis, USA

P1-307 **The Physical Quality of Andisols Under a Wide Range of Soil Development and Land Uses in Southern Chile**
Jose Dorner, Dorota Dec, Susana Valle, Felipe Zuniga, Jorge Ivelic and Ignacio Lopez
Universidad Austral de Chile, Chile

P1-308 **Stability of Soil Organic Matter in Particle Size Fractions in Top And Subsoil of Chilean Andisols**
Marcela Calabi-Floody[1]*, Cornelia Rumpel[2] and Maria De La Luz Mora[3]
[1] Scientific and Technological Bioresource Nucleus (BIOREN-UFRO), Chile; [2] Laboratoire de Biogeochimie et Ecologie des Milieux Continentaux (BIOEMCO, UMR Universite Paris VI et XII-CNRS-INRA-IRD), France; [3] Universidad de La Frontera, Chile

P1-309 **Accumulation and Mobility of Sulfate in Andosol Profiles Under Different Land Use and Fertilization**
Hidetaka Katou[1]*, Morihiro Maeda[2], Daisuke Yamada[2] and Ken'ichi Osaka[3]
[1] National Institute for Agro-Environmental Sciences, Japan; [2]Okayama University, Japan; [3]University of Shiga Prefecture, Japan

P1-310 **Effect of Applying Fresh Cow Dung on Phosphorus Pools and Other Soil Properties in an Acid Chilean Andisol**
Maria Luz Mora* and Rolando Demanet
Universidad de La Frontera, Chile

P1-311 **Diminishing Grain-Size of Mt. Fuji-Derived Holocene Intermediate Tephras in Japan with Increasing Distance, and Different Directions, from Volcanic Source: Influences on Andic Soil Properties**
Hiroshi Takesako and Yuji Ogura
Meiji University, Japan

C1.4-1: Marginal Soils- The Classification of Technogenic, Subaqueous, and Extraterrestrial Soil-like Bodies

Soil Art *Featured artist: Margaret Boozer, RED DIRT STUDIO, USA, www.margaretboozer.com*

P1-312 **Cultivation of Populus Euphratica* Populus Alba Hybrid in Garmsar Saline Soil Plain in Iran**
Rasool Mirakhorli
Agriculture, Iran

P1-313 **Utilization of Salt Tolerant Species for Rehabilitation Coastal Saline Soil at Petchaburi Province of Thailand**
Pirach Pongwichian[1]*, Arunee Yuwaniyama[1], Chaiyanam Dissataporn[1], Rungsun Im-Erb[1] and Eiichi Kohno[2]
[1] Land Development Department, Thailand; [2]Nihon University, Japan

P1-314 **Characterization and Classification of Some Selected Wtland Soils for Rice and Vegetable Production in Ekiti State, Nigeria**
Abayomi Fasina, Olubunmi Shittu and Olabode Amolaja
Ekiti state University, Nigeria

P1-315 **Soil Resource Potential of Buraka Micro-Watershed in Mewat District of Haryana, India for Integrated Development**
Sk Mahapatra*, Cs Walia, Tarsem Lal, Ram Gopal, Gs Sidhu and Jayan Surya
Indian Council of Agricultural Research, India

P1-316 **The Subaqueous Soils of the Danube Delta Biosphere Reserve**
Valentina Cotet[1]*, Victoria Mocanu[2] and Nicolae Florea[3]
[1] National Research and Development Institute for Soil Science, Dunarea de Jos University from Galati, Romania; [2]National Research and Development Institute for Soil Science, Romania; [3]Academy of Agricultural and Forestry Sciences, Gh. Ionescu Sisesti, Romania

P1-317 **Elite and Prime Land: Similar Messages and Continued Trade-Offs Over Half a Century Later in New Zealand's Largest City**
Fiona Curran Cournane*, Melanie Vaughan, Ali Memon and Craig Fredrickson
Auckland Council, New Zealand

P1-318 **The Amount and Distribution of Peatlands Carbon Stock in Selected Areas of Papua, Indonesia**
Sartji Taberima[1]*, Julius Dwi Nugroho[1], Irnanda Aiko Fifi Djunaa[1], Saraswati Prabawardani[1], Daniel Murdiyarso[2] and Joko Purbopuspito[2]
[1] State University of Papua, Indonesia; [2]Center for International Forestry Research (CIFOR), Indonesia

P1-319 **Agronomy Development of Mustard Plants (brassica Juncea) Grown on Mining Soils**
Paloma Nadal Ruiz* and Arturo Aguirre Gomez
Universidad Autonoma Nacional de Mexico, Mexico

P1-320 **Subsidence Rate in Peatland Planted to Acacia Crassicarpa at Bukit Batu, Riau over a Two-Year Measurement**
Darmawan [1]*, Basuki Sumawinata[1], D P T Baskoro[1] and C P Munoz[2]
[1]Bogor Agricultural University, Indonesia; [2] Sinarmas Forestry, Indonesia

P1-321 **Exactly Soil Science Study of South-West Iran Region**
Alireza Zahirnia[1], Mahmood Alimohamadi[1] and Kobra Makvandi[2]
[1]Sugar Cane and by Product Company, Iran; [2]Saman Abrah Co, Iran

P1-322 **Characterization and Classification of Salt Affected Soils for Reclamation and Management - A Case Study of Haryana, India**
Jaya N. Surya*, G. S. Sidhu, C. S. Walia, Tarsem Lal, S.k. Mahapatra and Dipak Sarkar
National Bureau of Soil Survey and Land Use Planning, India

P1-323 **Nutrient Cycle in Acacia Crassicarpa Plantation on Deep Tropical Peatland**
Suwardi[1]*, Gunawan Dajakirana[1], Basuki Sumawinata[1], Darmawan -[1] and Dian Novarina[2]
[1] Bogor Agricultural University, Indonesia; [2]Riau Andalan Pulp and Paper, Indonesia

C1.5-1: Validation of Soil Carbon Sequestration

P1-324 **Changes in Soil Carbon and Nitrogen Contents, and their Anaerobic Decomposition Potentials after Rice Paddy Abandoned to Wetland**
Weiguo Cheng[1]*, Tian Liu[2], Shuhei Sato[1], Shuirong Tang[2], Satoshi Hattori[1], Mitsuhiro Hayashida[1], Keitaro Tawaraya[1], Ronggui Hu[2], Qiaoyun Huang[2], Xingkai Xu[3] and Yao Huang[3]
[1] Yamagata University, Japan; [2] Huazhong Agricultural University, China; [3]Chinese Academy of Sciences, China

P1-325 **Spatial Evident of Soil Organic Carbon Inference in Tropical Reserve Forest Using Geospatial Domain**
Vandana Tomar[1]* and Amit Kumar[2]
[1]Haryana Institute of Public Administration, India; [2]VLSI, NITkurukshetra, India

P1-326 **Evaluation of Soil and Plant Carbon, Nitrogen and Water Use Efficiency under Different Tillage Systems and Manure Application Using Stable Isotope Technique**
Mutiu Busari[1]*, Felix Salako[1], Claudio Tuniz[2] and Leo Mayr[3]
[1] Federal University of Agriculture, Nigeria; [2]The Abdus Salam International Centre for Theoretical Physics (ICTP), Italy; [3]IAEA Seibersdorf, Austria

P1-327 **Carbon Stocks and Soil Fertility in Physically Degraded Lands - Are We Over Estimating?**
Mavinakoppa S Nagaraja[1]*, Prabhakara, G.V. Reddy[2] and Srinivasamurthy, A Chilakunda[2]
[1]University of Horticultural Sciences, India; [2]University of Agricultural Sciences, India

P1-328 **Effect of Soil, Fertilizer and Cropping System Management on Soil Carbon Storage under Maize and Cassava Production**
Luanmanee, S.[1], Tipayarak, S.[2], Paisancharoen,K.[3], Amonpon, W.[4] and Klongchang, S.[1]
[1]Nakhon Sawan Field Crops Research Center, Thailand; [2]Khon Kaen Field Crops Research Center, Thailand; [3]Field and Renewable Energy Crops Research Institute, Thailand; [4]Rayong Field Crops Research Center, Thailand

P1-329 **Soil Organic Carbon Dynamics under Soil Managements after Deforestation in Eastern Thailand**
Sathaporn Jaiarree[1]* and Amnat Chidthaisong[2]
[1] Land Development Department, Thailand; [2]King Mongkut's University of Technology Thonburi, Thailand

P1-330 **Comparison of Methods to Estimate and Map the Carbon Content of Scottish Soils**
Nikki Baggaley*, Matt Aitkenhead, Laura Poggio, Alessandro Gimona and Allan Lilly
James Hutton Institute, United Kingdom

P1-331 **Soil Organic Carbon (soc) Prediction in Cocoa (theobroma Cacao L.) Landscapes in South-West Ivory Coast Using Infrared Spectroscopy**
Lucien Diby[1]*, Ermias Aynekulu[2], Guillaume Kouassi[1], Eric Yao[1] and Keith Shepherd[2]
[1] World Agroforestry Centre (ICRAF), Ivory Coast; [2]World Agroforestry Centre (ICRAF), Kenya

P1-332 **Soil Organic Carbon Mapping of a Forest Beech in Southern Italy Using Laboratory-Based Vis-Nir Spectroscopy**
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National Research Council of Italy, Italy

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[1] Embrapa Semiarido, Brazil; [2]UNIVASF, Brazil; [3]UFPE, Brazil

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[1]Forestry and Forest Products Research Institute, Japan; [2]The University of Tokyo, Japan; [3]Kagoshima University, Japan

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[1]Universiti Teknologi Malaysia, Malaysia; [2]Shomal University, Iran

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[1]Institute for Environmental Sciences, Japan; [2] Kyoto Prefectural University, Japan; [3] Tohoku University, Japan

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[1]Swedish University of Agricultural Sciences, Sweden; [2]North Carolina State University, USA

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[1]NARO Institute of Fruit Tree Science, Japan;[2] Kyoto University, Japan

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[1] Centre de Recherche Public Gabriel Lippmann, Luxembourg; [2]Universite Pierre et Marie Curie, France

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[1] The Chinese Academy of Sciences, China; [2]Wageningen University, Netherlands

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[1]Chinese Academy of Sciences, China; [2]Lincoln University, New Zealand

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[1]Ahmadu Bello University, Nigeria; [2]International Institute of Tropical Agriculture, Nigeria

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[1] The University of Melbourne, Australia; [2]Department of Environment and Primary Industries, Australia

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Laksmita Santi[1], Didiek Goenadi[2]* and Witjaksono Darmosarkoro[3]
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[1]Ohio State University, USA;[2]Oak Ridge National Laboratory, USA

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[1]South Dakota State University, USA;[2] Pusan University, Korea; [3]USDA, USA

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[1] Nanjing Agricultural University, China;[2] Colorado State University, USA

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[1] Lincoln University, New Zealand; [2]Scottish Rural University College, United Kingdom; [3]Chinese Academy of Sciences, China

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H Baris Tecimen*
Istanbul University Faculty of Forestry, Turkey

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[1] University of Turin, Italy; [2]University of Limerick, Ireland

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Pranoy Pal[1]*, Tim J. Clough[2] and Francis M. Kelliher[3]
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Sang Yoon Kim[1], Prabhat Pramanik[1], Jessie Gutierrez[1] and Pil Joo Kim[2]*
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David Burton[1] and Bernie Zebarth[2]
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Rong Sheng, Jinbo Liu and Wenxue Wei*
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Hongtao Xing*, Enli Wang*, Tom Denmead, Ben Macdonald and Chris Smith

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The University of Melbourne, Australia

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National Institute for Agro-Environmental Sciences, Japan

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Raj Setia[1]* and Petra Marschner[2]
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Atsunobu Kadono[1]*, Sandeep Kumar[2], Toru Nakajima[3] and Rattan Lal[3]
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Shanghai Academy of Agricultural Sciences, China

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Ryosuke Fujinuma*
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Andrio Adiwibowo*
University of Indonesia, Indonesia

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Yuhua Kong[1]*, Xitian Yang[1], Mirai Watanabe[2] and Kazuyuki Inubushi[3]
[1] Henan Agricultural University, China;[2] National Institute for Environmental Studies, Japan;[3] Chiba University, Japan

P1-420 **Soil CO2 Flux during Decomposition of Leaf Litter as Affected by Soil Water and N Addition**
Xuezhang Li[1], Mingan Shao[1], Xiaorong Wei[2] and Xiaoxu Jia[2]
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Niklas Lehto* and Timothy Clough
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P1-422 **Bayesian Calibration of Soil Nitrogen, Nitrous Oxide Flux Process at Regional Scale, Central Hokkaido, Japan**
Xi Li and Ryusuke Hatano
Hokkaido University, Japan

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[1] University of the West Indies, Trinidad&Tobogo;[2] University of Guelph, Canada

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[1] The University of Adelaide, Australia;[2] CSIRO Land and Water / Sustainable Agriculture Flagship, Australia

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[1] Government College University, Pakistan;[2] University of Agriculture, Pakistan;[3] Ayub Agricultural Research Institute (AARI), Pakistan

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[1] Embrapa Agrobiologia, Brazil;[2] UEO, Brazil

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Toufiq Iqbal*
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[1] Central Mindanao University, Philippines;[2] Gyeongsang National University, Korea

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[1] Nuclear Research Center, Egypt;[2] Atomic Energy Commission of Syria

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P1-462 **Variations of Available Nitrogen along the Upland Meadow in Wugong Mountain**
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Kripal Singh[1]*, Bajrang Singh[2] and D D Patra[1]
[1] CSIR-Central Institute of Medicinal and Aromatic Plants, India;[2] CSIR-National Botanical Research Institute, India

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[1] CSIR-Central Institute of Medicinal and Aromatic Plants, India;[2] CSIR-National Botanical Research Institute, India;[3] Central Institute of Medicinal and Aromatic Plants, India

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[1] Henan Academy of Agricultural Sciences, China;[2] Zhejiang University, China

P1-472 **Shallow Sand-Filled Niches Beneath Drip Emitters Made Reclamation of an Impermeable Saline-Sodic Soil Possible: Ameliorative Effect on Soil Nutrients and Related Enzymes Activities**
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[1] Iwate University, Japan;[2] Akita Prefectural University, Japan

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I.A. El-Akhdar[1], Nour El-Din, M[1]. and A. R. El-Shanshoury[2]
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P1-485 **Effects of Drought and Irrigation Water Salinity Increases on Quantity and Quality of Sugarcane Production in South West Iran Weather Conditions**
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P1-486 **CO2 Flux in Salt Affected and Alkaline Soils Under Cotton in Tarim Oasis (china)**
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[1] China Agricultural University, China;[2] The University of Melbourne, Australia

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[1] Chinese Academy of Sciences, China;[2] Anhui University of Technology, China

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John Triantafilis
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Khaled Ibrahimi[1]*, Tsuyoshi Miyazaki[2] and Taku Nishimura[2]
[1] The University of Tokyo, Japan, The university of Sousse, Tunisia;[2] The University of Tokyo, Japan

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James Fisher
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National Institute of Crop Science, RDA, Korea

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Korea Forest Research Institute, Korea

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Wonkwang University, Korea

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Rural Development Administration, Korea

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Hani Mohsenifar[1]*, Ghassem Habibi Bibalani[2], Neda Babapour[3], Mohsen Alihamzeh[4], Nasim Fazelmodarres[1] and Elahe Pourfarahabadi[4]
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P1-513 **Carbon Sequestration and Nutrient Removal by Some Tree Species in an Agroforestry System in Punjab, India**
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P1-514 **Soil Organic Carbon (soc) in Soils along a Rainforest-Savannah Boundary in Central Guyana, South America**
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Amit Kumar, NIT Kurukshetra, India

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P1-519 **The Effect of Robinia Pseudoacacia Short Rotation Coppice on Soil Physical Properties**
Xavier Morvan[1]*, Sebastien Laratte[1] and Isabelle Bertrand[2]
[1]University of Reims Champagne-Ardenne, France;[2] INRA, UMR 614 Fractionnement des AgroRessources et Environnement, France

P1-520 **The Morphological Features of Mica And Chlorite Minerals in Fine Sand Fraction in Some Forest Soils of Kurdistan Iraq**
Shuela Mohammed and Salman Khalaf*
Iraqi Citizenship, Iraq

P1-521 **The Effects of Inceptisols and Ultisols on Composition of Solution Ions in Fushan Natural Hardwood Forest Ecosystem in Taiwan**
Pin-Chieh Chen[1], Chen-Chi Tsai[2], Chia-Hsing Lee[1], Chun-Chih Tsui[1] and Zueng-Sang Chen[1]*
[1]National Taiwan University, Taiwan;[2] National Ilan University, Taiwan

P1-522 **The Effect of Prescribed Burning on Soil Microbial Properties in a Suburban Native Forest of South-East Queensland**
Kadum Abdullah[1], Zhihong Xu[1]*, Timothy Blumfield[1], Sue Boyd[1], Shahla Bai[1], Frederique Reverchon[1] and Yuzhe Wang[2]
[1]Griffith University, Australia;[2] Nankai University, Chin

P1-523 **The Impact of Biodiversity on Initial Soil Erosion Processes and Nutrient Fluxes in Subtropical Forest Ecosystems**
Steffen Seitz*, Philipp Goebes*, Peter Kuhn and Thomas Scholten
Eberhard Karls University Tubingen, Germany

P1-524 **Nitrogen Fluxes in the Soil Profile of Tropical Seasonal Forests in Cameroon**
Makoto Shibata[1]*, Soh Sugihara[1], Antoine Mvondo Ze[2], Shigeru Araki[1] and Shinya Funakawa[1]
[1]Kyoto University, Japan;[2] Dschang University, Cameroon

P1-525 **Novel Techniques for Expanding Our Understanding of Soil Disturbance Resulting from Stump Harvesting Operations**
Jeff Collison[1], Clare Wilson[1]*, Andy Moffat[2], John Gallacher[3] and Andrew Tyler[1]
[1]University of Stirling, United Kingdom;[2] AJ Moffat & Associates, United Kingdom;[3] UPM Tillhill Ltd, United Kingdom

P1-526 **Effect of Forest Stands on the Subsurface Salt Accumulation and on the Watertable Level**
Tibor Toth[1]*, Kitti Balog[1], Andras Szabo[2], Zoltan Gribovszki[3], Nandor Fodor[2] and Laszlo Kuti[4]
[1]Centre for Agricultural Research of the Hungarian Academy of Sciences, Hungary;[2] Hungarian Academy of Sciences, Hungar[3] University of West Hungary, Hungary;[4] Hungarian Institute of Geology and Geophysics, Hungary

P1-527 **Hydropedological Interpretation of Ancient and Recent Soil Properties**
Darren Bouwer and Pieter Le Roux
University of the Free State, South Africa

P1-528 **Soil Contribution to Carbon Budget of Russian Forests**
Dmitry Schepaschenko[1]*, Lyudmila Mukhortova[2] and Anatoly Shvidenko[1]
[1]International Institute for Applied Systems Analysis (IIASA), Austria;[2] Siberian Branch of the Russian Academy of Science, Russia

P1-529 **Grazing in Mountain Ecosystems; Results of Long-Term Experiments in Norway**
Vegard Martinsen[1], Jan Mulder[1], James D.m. Speed[2], Atle Mysterud[3] and Gunnar Austrheim[2]
[1]Norwegian University of Life Sciences, Norway;[2] University Museum, Norwegian University of Science and Technology, Norway;[3] University of Oslo, Norway

P1-530 **Effect of Stand Factors and Tree Species Composition on the Content of Potentially Toxic Elements in Forest Soils**
Lubos Boruvka[1]*, Jarmila Cechmankova[2], Vit Sramek[3], Milan Sanka[4], Vaclav Tejnecky[1] and Karel Nemecek[1]
[1]Czech University of Life Sciences in Prague, Czech Republic;[2] Research Institute for Soil and Water Conservation, Czech Republic;[3] Forestry and Game Management Research Institute, Czech Republic;[4] Masaryk University Brno, Czech Republic

P1-531 **The Brownfield of the Eiffel Tower Steel Mill: A Highly Contaminated but Well-Functioning Ecosystem**
Pierre Lucisine[1]*, Michael Danger[1], Vincent Felten[1], Delphine Aran[1], Sonia Henry[1], Hermine Huot[1], Antoine Lecerf[2], Gabriel Moinet[1], Jean-Louis Morel[1], Serge Muller[1], Johanne Nahmani[3] and Florence Maunoury-Danger[1]
[1]Universite de Lorraine, France;[2] Universite Toulouse III, France;[3] Universite de Montpellier II, France

P1-532 **Effect of Landslide Deposition on Soil Properties in the Xitou Experiment Forest, Central Taiwan**
Chih-Hsin Cheng[1]*, Sheng-Che Hsiao[1], Yu-Hsuan Huang[1], Chih-Yu Hung[1], Chuang-Wen Pai[1], Chiu Ping Chen[1] and Oleg Menyailo[2]
[1]National Taiwan University, Taiwan;[2] Institute of Forest SB RAS, Russia

P1-533 **Effect of Silicon Application in Soil on Betula Pendula Roth. Growth under Water Deficiency Stress**
Nadiia Rositska
M.M. Gryshko National Botanical Garden, Ukraine

P1-534 **Effects of Slope Gradient and Planted Species on the State of Soil Organic Carbon Storage in a High Rainfall Forested Area of Shikoku Island, Southern Japan**
Hisao Sakai*, Kazuki Miyamoto, Tomoaki Morishita and Kyotaro Noguchi
Forestry and Forest Products Research Institute, Japan

P1-535 **Aboveground and Belowground Patterns in Pyrogenic Boreal Aspen Ecosystems: What Governs Nutrient Availability?**
Sanatan Das Gupta*, M. Derek Mackenzie and Sylvie A. Quideau
University of Alberta, Canada

P1-536 **Assessment of Carbon Stock in Soil and Restored Deciduous Forest at Huai Hong Khrai Royal Development Study Center, Northern Thailand**
Chackapong Chaiwong[1]*, Nuttaphong Duanden[1], Ronnagon Akarasiriteerakun[1], Pranode Somchaiyaphum[1], Soontorn Khamyong[2], Niwat Anongrak[2] and Suprarb Paramee[3]
[1] Maejo University, Thailand;[2] Chiang Mai University, Thailand;[3] Wildlife and Plant Conservation, Thailand

P1-537 **Distribution of Organic Carbon and Nitrogen Associated with Aggregates in Semiarid Conifer Forest of the Loess Plateau, China**
Hailong Gao[1], Liping Qiu[2]*, Xingchang Zhang[2] and Jimin Cheng[2]
[1] Northwest A&F University, China;[2] Institute of Soil and Water Conservation, China

P1-538 **Edaphological Characteristics of Selected Philippine Acid Upland Soils as Affected by Soil Amendments and Fertilizers**
Michelle Ann Calubaquib*, Pearl Sanchez, Rodrigo Badayos and Pompe Sta Cruz
University of the Philippines Los Banos, Philippines

P1-539 **Functions and Complexities of a Reclaimed Mine Spoil: A Case Study of Kathara Coalmine Area of Jharkhand, India**
Brajkishore Sinha and Amita Hembrom
Ranchi University, India

P1-540 **Establishing Relationships between Soil Fertility Indicators and Abaca Biomass Production in Central Philippines**
Romel Armecin[1]*, Rodrigo Badayos[2] and Wilfredo Cosico[2]
[1] Visayas State University, Philippines;[2] University of the Philippines - Los Banos, Philippines

P1-541 **Pollution Analysis of Soils in the Caves of Bukk -Mountains**
Endre Dobos*, Diana Bertoti, Karoly Kovacs, Peter Vadnai and Laszlo Lenart
University of Miskolc, Hungary

P1-542 **The Early Effect of Fertilization on Growth of Quercus Serrata Seedlings in Harvested Pinus Rigida Plantation, Korea**
A-Ram Yang*, Jaehong Hwang and Min Seok Cho
Korea Forest Research Institute, Korea

P1-543 **The Comparison of Seedling Growth of Zelkova Serrata According to Aspects at Harvested Pinus Rigida Plantation, Korea**
A-Ram Yang[1]*, Jaehong Hwang[1], Min Seok Cho[1], Sun-Wha Song[2] and Chung Ho Choi[3]
[1] Korea Forest Research Institute, Korea;[2] Korea University, Korea;[3] Gyeonggi-do Forest Environment Research Institute, Korea

P1-544 **Regional Differences in Early Growth of Pinus Densiflora Seedlings at Harvested Pinus Rigida Plantations, Korea**
A-Ram Yang*, Jaehong Hwang and Min Seok Cho
Korea Forest Research Institute, Korea

P1-545 **Simultaneous Removal of Semi-Volatile Organic Compounds and Heavy Metals in Soil By Using Ultrasound-Assisted Soil Washing**
Chan-Soo Lim, Do-Gun Kim and Seok-Oh Ko*
Kyung Hee University, Korea

P1-546 **Comparison of Soil Properties of Two Elevations in the Mt. Makiling Forest Reserve, the Philippines**
Jae Seong Park, Pil Sun Park*, Gellie Bustarde Gadia, Hyun Jung Kim and You Lim Jang
Seoul National University, Korea

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P1-547 **Practical Application of Novel Physical Ballast Washing System to Soil Remediation In Polluted Rail Yard**
Youngmin Cho*, Jae-Young Lee, Tae-Soon Kwon, Duck-Shin Park and Woo-Sung Jung
Korea Railroad Research Institute, Korea

P1-548 **Needs of Biosecurity and Protocols for the Environmental Management of Carcasses Burial**
Hoseong Cho[1] and Geonha Kim[2]*
[1] Chonbuk National University, Korea;[2] Hannam Univerisity, Korea

P1-549 **Detection of Foot-And-Mouth Disease Virus and Coxsakievirus in the Soil And Leachate of Modeled Carcass Burial Site**
Hoseong Cho[1] and Geonha Kim[2]*
[1] Chonbuk National University, Korea;[2] Hannam Univerisity, Korea

P1-550 **Cost Analysis for the Carcass Burial Construction**
Mihyung Kim and Geonha Kim*
Hannam Univerisity, Korea

P1-551 **Survival of Escherichia Coli O157:h7 and Listeria Monocytogenes in Soil, Liquid Manure, and Liquid Manure Amended Soil**
Kyu Seok Jung*, Min Ha Kim, Na-Young Choi, Sunggi Heu, Eunjung Roh, Dong Hwan Lee, Jeong-A Lim and Jae-Gee Ryu
National Academy of Agricultural Science, RDA, Korea

P1-552 **Microbial Community Analysis of Cattle and Pigs Carcass at Burial Sites**
Keun Sik Baik[1], Dong Cheol Seo[2], Se Won Kang[2], Ju Wang Yang[2], Ju Dong Yang[2], Sang Gyu Lee[2], Young Jin Seo[2], Jong Soon Choi[1], Joseph Kwon[1] and Ju Sik Cho[2]*
[1] Korea Basic Science Institute, Korea;[2] Sunchon National University, Korea

C4.1-3: Soil Ecosystem under Climate Change

P1-553 **Soil Biochemical and Rhizsophere Properties of Pterocarpus Indicus Grown in Contrasting N Levels in Soil Exposed to Elevated Atmospheric Temperature and CO2**
Venecio Ultra[1]*, Sim Hee Han[2] and Rosnah Rubenecia[3]
[1]Catholic University of Daegu, Korea;[2] Korea Forest Research Institute, Korea;[3] Kyungpook National University, Korea

P1-554 **Re-Evaluating the Biophysical and Technologically Attainable Potential of Topsoil Carbon Sequestration in China's Cropland**
Kun Cheng[1], Jufeng Zheng[1], Dali Nayak[2], Pete Smith[2] and Genxing Pan[1]*
[1] Nanjing Agricultural University, China;[2] University of Aberdeen, United Kingdom

P1-555 **Impact of Litter Addition on Gross Nitrogen Transformations in a Suburban Native Forest Under Repeated Prescribed Burning in South-East Queensland, Australia**
Yuzhe Wang[1], Zhihong Xu[2]*, Junqiang Zheng[2], Kadum M. Abdullah[2] and Qixing Zhou[1]*
[1] Nankai University, China;[2] Griffith University, Australia

P1-556 **Geospatial Approach for Carbon Sink in the Soil: An Investigation on Credible Strategy for Tropical Wildlife Reserve**
Pavan Kumar* and Vandana Tomar
Banasthali University, India

P1-557 **Experimental Warming Decreases Decomposition and Nutrient Release: Evidence from an Alpine Ecosystem**
Gaelle Ng Kam Chuen[1]*, Gary John Clark[1], Alison Carol White-Monsant[2], James Camac[3] and Caixian Tang[1]*
[1] La Trobe University, Australia;[2] University of Kentucky, USA;[3] University of Melbourne, Australia

P1-558 **Microbial Fixation of Atmospheric CO2 as Influenced by Organic Amendment Addition in Soil**
Saikat Chowdhury* and Nanthi Bolan
University of South Australia, Australia

P1-559 **The Effect of Heavy Metal on the Priming of Soil Organic Carbon Induced by Glucose Addition**
Saikat Chowdhury* and Nanthi Bolan
University of South Australia, Australia

P1-560 **Effect of Different Organic Manures and Chemical Fertilizers on CO2 Emission, Carbon Sequestration and Rice Yield in Soils Under Rice-Rice Cropping Pattern.**
Fahmida Rahman[1]*, A. T. M. S. Hossain[1], Md. Mizanur Rahman[2], G. K. M. M. Rahman[2], M. G. Miah[2] and M. A. Saleque[1]
[1] Soil Science, Bangladesh Rice Research Institute (BRRI), Bangladesh;[2] Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Bangladesh

P1-561 **Effects of Thinning on Nitrogen Utilization of Hinoki Cypress and Understory Vegetation in Shikoku Island, Southern Japan**
Yoshiyuki Inagaki[1]*, Kyotaro Noguchi[1] and Hidehisa Fukata[2]
[1] Forestry and Forest Products Research Institute, Japan;[2] Kochi Prefectural Forestry Technology Research Center, Japan

P1-562 **Soil Carbon Dynamics under Soil Management Systems for Maize Cultivation in Thailand**
Chinapatana Sukvibool* and Jaruporn Tosang
Division of Soil and Water Conservation Research and Development, Thailand

P1-563 **Peat Soil CO2 Respiration along a Land-Use Change Gradient**
Dwi Astiani[1] and Lisa Curran[2]
[1] Universitas Tanjungpura (UNTAN), Indonesia;[2] Standford University, USA

P1-564 **Carbon Stocks in Various Carbon Pools of Acacia Mangium Planted Forest in Peninsular Malaysia.**
Jeyanny Vijayanathan*, Ahmad Zuhaidi Yahya and Mohammad Fakhri Ishak
Forest Research Institute Malaysia (FRIM), Malaysia

P1-565 **Effect of Different Pasture Termination Strategies on N2O Emission in High Rainfall Cropping Systems**
Oxana Belyaeva
Department of Environment & Primary Industries , Australia

P1-566 **Assessment of Projected Climate Change on Soil Organic Carbon and Crop Yield Based on The Recent 20 Yrs Fertilization Applications in the Loess Plateau, China**
Haixin Chen, Ying Zhao, Hao Feng* and Benhua Sun
Northwest A & F University, China

P1-567 **Prediction of Soil Nitrogen Mineralization as Affected by In-Situ Warming in Paddy Fields in Japan**
Sho Sudo[1], Miwa Y.matsushima[1], Takeshi Tokida[2], Kentaro Hayashi[2], Yuki Kawai[1], Nobuko Katayanagi[2], Shu Miura[3], Kazuyuki Inubushi[1] and Toshihiro Hasegawa[2]
[1] Graduate School of Horticulture Chiba University, Japan;[2] National Institute for Agro-Environmental Sciences, Japan;[3] Hokkaido Research Organization, Japan

P1-568 **Regional Scale Modeling of Nitrogen Cycle on Andosols in an Intensive Livestock Farming Area**
Meihua Deng[1]*, Sonoko Bellingrath-Kimura[2], Masayuki Hojito[3], Muneoki Yoh[2] and Tianzhu Zhang[1]
[1] Tsinghua University, China;[2] Tokyo University of Agriculture and Technology, Japan;[3] Kitasato University, Japan

P1-569 **N2O Emissions from a Solar Greenhouse Soil as Affected by Nutrient Management**
Su Liu, Lingyun Kang, Qing Chen and Jingguo Wang*
China Agricultural University, China

P1-570 **Pedo-Ecological Patchiness as Affected by Rock Fragments in Semiarid Rangelands**
Pariente Sarah
Bar Ilan University, Israel

P1-571 **Impact of Climate Change on Carbon Cycling and Soil Microorganisms in an Arable Ecosystem**
Christian Poll*, Sven Marhan and Ellen Kandeler
University of Hohenheim, Germany

P1-572 **Effects of Tillage and Fertilization on Nitrate and Phosphate Desorbed from Anionic Exchange Membranes over Winter**
Yichao Shi, Noura Ziadi* and Roger Lalande
Agriculture and Agri-Food Canada, Canada

P1-573 **Comparison of CO2 Emission from Two Different Soils in Vitro**
Ahmad Heidari* and Sara Sartipi
University of Tehran, Iran

P1-574 **Does Temperature Differentiate Decomposition Rates of Labile and Recalcitrant Soil Organic Carbon?**
Erick Zagal[1]*, Cristina Munoz[1] and Manuel Casanova[2]
[1] Universidad de Concepcion, Chile;[2] Universidad de Chile, Chile

P1-575 **Effect of Climatic Conditions on Physico-Chemical Properties of Soil from Panvel and Pune District Of Maharashtra, India**
Gajanan Wagh*
Rayat Shikshan Sansthas, India

P1-576 **Effect of Various Organic Mulches on Soil Enzymes**
Bhanooduth Lalljee*
University of Mauritius, Mauritius

P1-577 **The Effects of Fertilization on CO2 Emissions from Peat Soils in Riau, Indonesia**
Husnain Husnain[1]*, Ibrahim Adamy[1], Hery Widianto[2], Nurhayati Nurhayati[2], Ali Jamil[1] and Fahmuddin Agus[1]
[1] Indonesian Soil Research Institute, Indonesia;[2] Riau Assessment Institute for Agricultural Technology, Indonesia

P1-578 **Effects of Elevated CO2 on Soil Properties and Residue Decomposition**
Clayton Butterly[1], Roger Armstrong[2], Deli Chen[3] and Caixian Tang[1]
[1] La Trobe University, Australia;[2] Department of Environment & Primary Industries, Australia;[3] The University of Melbourne, Australia

P1-579 **Integrated Soil Fertility Management Strategies for Climate Change Adaptation in Africa**
James Mutegi* and Shamie Zingore
International Plant Nutrition Institute (IPNI), Kenya

P1-580 **Germinated Oil Palm (elaeis Guineensis Jacq.) Seedlings Responses towards Gibberellic Acid (ga3) Treatment Under Glasshouse Condition**

Nurul Raihan Abd Rashid and Hawa Jaafar*
Universiti Putra Malaysia, Malaysia

P1-581 **Soil Fluxes of Carbonyl Sulfide (cos) and Carbon Dioxide (co2) in a Tropical Forest Ecosystem**
Sabrina Juarez[1]*, Kadmiel Maseyk[1], Celine Lett[1], Wu Sun[2] and Ulli Seibt[2]
[1]UPMC, France;[2]UCLA, USA

P1-582 **Increased CO2 and Temperature Effects on Soil Water Balances Under Maize and Potato**
Dennis Timlin[1]*, David Fleisher[1], Soo-Hyung Kim[2] and V.r. Reddy[1]
[1]USDA-ARS, USA;[2] University of Washington, USA

P1-583 **Warmer Atmospheric Temperature Enhances Microbial Activity to Facilitate the Rate of Organic C Mineralization in Soil Of North-Eastern India**
Prabhat Pramanik*, Chamim Sultana Ahmed, Niladri Gupta and Kamruza Ahmed
Tocklai Experimental Station, India

P1-584 **The Impact of Increasing Temperature on Carbon Dynamics in the Antarctic Soil**
Minseok Park*, Wonjae Hwang and Seunghun Hyun
Korea University, Korea

P1-585 **Temporal Change in Soil Carbon Dynamics under Pinus Koraiensis and Quercus Acutissima Forest Floors**
Ji-Suk Park[1], Hee-Myong Ro[1]*, Min-Jin Lee[1], Seo-Yeon Lee[1], Joo-Han Sung[2] and Tae-Sung Kwon[2]
[1]Seoul National University, Korea;[2] Korea Forest Research Institute, Korea

P1-586 **Effects of Soil Temperature and Aging Time on the Toxicity of Glyphosate to Two Collembolan Species**
June Wee, Yun-Sik Lee, Somi Yu, Youngeun Kim, Hyoung-Ho Mo and Kijong Cho*
Korea University, Korea

P1-587 **Assessment of Soil Carbon Stock Change on Cut-Slope**
Sun Yong Sung, Dongkun Lee*, Sung Ho Kil and Ho Gul Kim
Seoul National University, Korea

P1-588 **Abiotic Stress on Photosynthetic Machinery in C4 Plants: Insights from Sorghum Chloroplast Proteomics**
Swapan Kumar Roy[1], Soo-Jeong Kwon[1], Sang-Woo Kim [1], Seong-Woo Cho[2], Chul-Soo Park[1] and Sun-Hee Woo[1]*
[1]Chungbuk National University, Korea; [2] RDA, Korea

P1-589 **Characterization of Abiotic Stress Responsive Protein in Wheat Grain**
Abu Hena Mostafa Kamal[1], Swapan Kumar Roy[1], Ki-Hyun Kim[1,3], Soo-Jeong Kwon[1], Dong-Jin Lim[1], Seong-Woo Cho[2], Keun-Yook Chung[1], Chul-Won Lee[1] and Sun-Hee Woo[1]*
[1] Chungbuk National University, Korea; [2]RDA, Korea;
[3] Chungcheongbuk-do Garlic Research Institute, Korea

P1-590 **Comparative Analysis of Biotic Stress-Responsive Proteins in Hexaploid Wheat**
Abu Hena Mostafa Kamal[1], Swapan Kumar Roy[1], Ki-Hyun Kim[1,3], Won-Ju Lee[1], Jong-Ho Yang[1], Seong-Woo Cho[2], Keun-Yook Chung[1], Chul-Won Lee[1] and Sun-Hee Woo[1]*
[1] Chungbuk National University, Korea;[2]RDA, Korea;
[3] Chungcheongbuk-do Garlic Research Institute, Korea

P1-591 **Evaluation of Flooding Tolerance of Soybean Cultivars and analysis of the Tolerance Mechanism Using Proteomics Techniques**
Hee-Young Jang[1,3], Yohei Nanjo[2], Hong-Sig Kim[3], Setsuko Komatsu[2], Jong-Sik Lee[1], Gun-Yeob Kim[1] and Sun-Hee Woo[3]*
[1] RDA, Korea;[2] NARO, Japan;[3] Chungbuk National University, Korea

P1-592 **Metabolites Analysis in Wheat Root under Salinity Stress**
Da-Eun Kim[1], Abu Hena Mostafa Kamal[1], Soo-Jeong Kwon[1], Jong-Ho Yang[1], Ki-Hyun Kim[1], Seong-Woo Cho[2], Chul-Soo Park[1], Moon-Soon Lee[1], Chul-Won Lee[1] and Sun-Hee Woo[1]*
[1] Chungbuk National University, Korea;[2] RDA, Korea

P1-593 **Profiling of Mitochondrial Proteome in Wheat Roots**
Da-Eun Kim[1], Swapan Kumar Roy[1], Soo-Jeong Kwon[1], Dong-Jin Lim[1], Seong-Woo Cho[2], Chul-Soo Park[1], Keun-Yook Chung[1] and Sun-Hee Woo[1]*
[1] Chungbuk National University, Korea;[2] RDA, Korea

P1-594 **Proteome Analysis of Roots of Wheat Seedlings under Aluminum Stress**
Myeong-Won Oh[1], Swapan Kumar Roy[1], Jung-Hee Ko[1], Hee-Young Jang[2, 1], Won-Ju Lee[1], Seong-Woo Cho[2], Moon-Soon Lee[1], Keun-Yook Chung[1] and Sun-Hee Woo[1]*
[1]Chungbuk National University, Korea;[2] RDA, Korea

P1-595 **Proteomics Analysis of the Wheat Chloroplast and Sub-Organeller Compartments: Isolation and Fractionation by Using Gradient Centrifugation**
Abu Hena Mostafa Kamal[1], Swapan Kumar Roy[1], Soo-Jeong Kwon[1], Sang-Woo Kim[1], Seong-Woo Cho[2], Keun-Yook Chung[1], Moon-Soon Lee[1], and Sun-Hee Woo[1]*
[1] Chungbuk National University, Korea;[2] RDA, Korea

P1-596 **Effects of Added Organic Carbon and Increasing Temperature on Soil Respiration Rate**
Jung-Eun Lee and Seok-In Yun*
Wonkwang University, Korea

P1-597 **Intermittent Drainage Suppresses More Effectively Methane Emission in High Biomass Amended Paddy during Rice Cultivation**
Mozammel Haque, Sang Yoon Kim, Gilwon Kim and Pil Joo Kim*
Gyeongsang National University, Korea

P1-598 **Importance of Rice Root Oxidation Potential as a Regulator of Ch4 Production under Waterlogged Conditions**
Jessie Gutierrez[1], Gil Won Kim[2] and Pil Joo Kim[2]*
[1] Gyeongsang National University, City Environment and Natural Resources Office, Philippines;[2] Gyeongsang National University, Korea

P1-599 **Evaluation of Root Oxidizing Potential as a Regulator of Rice Root Iron Uptake Using Image Analysis**
Sarah Louise Atulba, Jessie Gutierrez, Gil Won Kim, Sang Yoon Kim and Pil Joo Kim*
Gyeongsang National University, Korea

P1-600 **Combination of Methanogenesis and Microbial Respiration as a Scalar to Determine Microbial Biomass Activity in Waterlogged Soils**
Jennifer Cuello, Mozammel Haque, Prabhat Pramanik and Piljoo Kim*
Gyeongsang National University, Korea

P1-601 **Effect of Plastic Film Mulching on Greenhouse Gases Emission in Cover Crop Amended Soil as a Green Manure During Corn Cultivation**
Jennifer Cuello, Jessie Gutierrez, Sang Yoon Kim and Pil Joo Kim*
Gyeongsang National University, Korea

P1-602 **Comparison of Global Warming Potential Between Rice Paddy and Upland Soils during Cropping Season**
Hyunyoung Hwang, Jennifer Cuello, Mozammel Haque and Piljoo Kim*
Gyeongsang National University, Korea

P1-603 **Effect of Temperature and Soil Properties on Collembola Communities in Korean Forest Soil**
Yun-Sik Lee
Korea University, Korea

Poster Session 2 (P2) June 10(Tue)

IDS3: Soil Information and Food Security

Soil Art *Featured artist: Nil by Mouth (Chris Fremantle and Mike Bonaventura of the Crichton Carbon Centre), UK, ecoartscotland.net*

P2-1 **Growth Performance and Mineral Composition of Moringa Oleifera Seedlings as Influenced by Surface and Subsoil under Water Stress Conditions**
Suarau Oshunsanya[1]*, John Fagbenro[2] and Tolulope Oyewo[1]
[1] University of Ibadan, Nigeria;[2] Bowen University, Nigeria

P2-2 **Screening of Ten Rice Genotypes for Zn Efficiency by Using Solution Culture**
Hafeez B, Khanif Y. M and Saleem. M
University Putra Malaysia, Selangore

P2-3 **The Study of Lead (pb) Remediation, Antioxidant Enzyme Activity and Malondialdehyde Biomarker Content in Two Barely Species in Contaminated Soils Under Greenhouse Condition**
Afshin Mozafari*
Islamic Azad University (IAU), Iran

P2-4 **Screening of Early and Late-Season Sugarcane Varieties on Sprinkler Irrigated Ferralsols in Northern Ivory Coast Following a New Selection Scheme**
Crepin Bi Pene[1]*, Melanie Bomo Boua[1] and Patrick Pons[2]
[1] SUCAFCI-SOMDIAA, Ivory Coast;[2] SUCAFCI-SOMDIAA, France

P2-5 **The Scottish Government's Portfolio of Research Providing the Research Base and Tools for Understanding Soil and How That Impacts on Key Global Issues: Food Security & Sustainable Intensification**
Lorna Dawson[1]*, Charles Bestwick[2] and Sandra Marks[3]
[1] The James Hutton Institute, United Kingdom;[2] University of Aberdeen, United Kingdom;[3] RESAS, Scottish Government, United Kingdom

P2-6 **Using Soil Information in Geospatial Natural Disaster Analysis**
Garib Mammadov
Azerbaijan National Academy of Sciences, Azerbaidjan

P2-7 **Effect of Potassium Fertilization Forms on Growth, Yield and Quality of the Sugar Beet Crop in Salt Affected Soils in Eastnorthern Delta of Egypt**
El Kholy, M. H.[1]; A.H Abd El Hadi[1]; and E.H.H. Selim[2]
[1] Soil, Water and Environment Res. Inst., ARC, Egypt;
[2] Sugar Crops Res. Inst., ARC, Egypt

P2-8 **Interaction of Nitrogen and Phosphorous Rates on Fertilizer Use Efficiency in Lettuce and Spinach**
Mahdi Sadeghi Pour Marvi*
University of Tehran, Iran

P2-9 **Soil Quality and Crop Production in an Agricultural Catchment of the Typical Mollisol Region, Northeast China**
Weige Yang[1], Fenli Zheng[1]* and Xiaocun Zhang[2]
[1] Chinese Academy of Sciences and Ministry of Water Resources, China;[2] Shangluo University, China

P2-10 **Transmission of Selenium and Cobalt in "Soil-Pasture-Feed-Animal Chain"(spfac) and Their Regulation to the Nutritions of Pasture and Animal**
Jie Xiao Lei
Huanghuai University, China

P2-11 **Soil Science Publications: Trends and Impact**
Alfred Hartemink[1], Budiman Minasny[2] and Alex Mcbratney[2]
[1] University of Wisconsin - Madison, USA;[2] The University of Sydney, Australia

P2-12 **Model Development for Multi-Sensor Irrigation Systems to Optimise Water Use in Crop Production**
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[1] Zhejiang University, China;[2] SGS United Kingdom Ltd, United Kingdom;[3] Cranfield University, United Kingdom

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[1] Rajendra Agricultural University, India;[2] Indian Council of Agricultural Research, India

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[1] Federal University of Technology, Nigeria;[2] Universidade Federal de Lavras, Brazil

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[1] Federal University of Lavras, Brazil;[2] International Zinc Association, Brazil;[3] Environmental and Agronomical Laboratory, Brazil

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[1] Innovation and the Arts, Australia;[2] CSIRO, Australia

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[1] Govt. of Odisha, India;[2] College of Agriculture, India;
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Carlos Cruz[1]* and Rodrigo Vargas[2]*
[1] Instituto Nacional de Estadistica y Geografia, Mexico;
[2] Universidad of Delaware, USA

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National Authority for Remote Sensing and Space Sciences (NARSS), Egypt

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[1] Project Directorate for Farming Systems Research (ICAR), India;[2] Indian Agricultural Research Institute, India;[3] International Plant Nutrition Institute (IPNI), India

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RDA, Korea

IDS5: Biochar Soil Amendment for Environmental and Agronomic Benefits

Soil Art *Featured artist: Ayumi Matsuzaka, Germany and Japan, www.ayumi-matsuzaka.com/all-my-cycle*

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[1] Crop and Soil, Scotland's Rural College, United Kingdom;[2] Scotland's Rural College, United Kingdom;[3] UK Biochar Research Centre, United Kingdom

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Gilbert C. Sigua[1]*, Jeffrey M. Novak[1], Don W. Watts[1], Keri B. Cantrell[1] and Mark G. Johnson[2]
[1] USDA-Agricultural Research Service ; [2] Western Ecology Division, USA

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[1] Universidade de Coimbra, Portugal;[2] Centre de Recerca Ecologica i Aplicacions Forestals, Spain

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Koji Kameyama[1]*, Teruhito Miyamoto[1], Yukiyoshi Iwata[1] and Takahiro Shiono[2]
[1] National Agriculture and Food Research Organization, Japan;[2] Ministry of Agriculture, Forestry and Fisheries, Japan

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[1] Ministry of Science & Technology, Iraq;[2] Directorate of Agricultural Research, Iraq

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Muqiu Zhao*
Chinese Academy of Sciences, China

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[1] Norwegian Geotechnical Institute, Norway;[2] University of Life Sciences, Norway

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Zhejiang University, China

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Liqiang Cui[1], Genxing Pan[2], Lianqing Li[2], Jinlong Yan[1]* and Andrew Chang[3]
[1] Yancheng Institute of Technology, China;[2] Nanjing Agricultural University, China;[3] University of California Riverside, USA

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[1] Hangzhou Normal University, China;[2] Zhejiang University, China

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[1] University of Newcastle, Australia;[2] Australian National University, Australia

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[1] The University of Newcastle, Australia;[2] Australian National University, Australia

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[1] University of Pennsylvania, USA;[2] Delaware State University, USA

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Cheng-Yuan Xu[1]*, Shahla Hosseini-Bai[1], Yanbin Hao[2], Rao C. N. Rachaputi[3], Zhihong Xu[4] and Helen Wallace[5]

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Consuelo Soler Llinares, Carlos Casanova Pena, Jose Antonio Rodriguez Martin and Alberto Gonzalez Moreno*
National Institute of Agricultural and Food (INIA), Spain

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Siti Norayu Omar Baki, Hawa Ze Jaafar* and Radziah Othman*
Universiti Putra Malaysia, Malaysia

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[1] University of South Australia, Australia;[2] Campus Universitario de Espinardo, Spain;[3] Environmental and Natural Resource Management Consultants Pty Ltd, Australia;
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Nattaporn Prakongkep[1], Robert Gilkes[2]* and Wanpen Wiriyakitnateekul[3]
[1] Agricultural Product Science Research and Development Office, Thailand;[2] University of Western Australia, Australia;
[3] Office of Science for Land Development, Thailand

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[1] IMAR - Instituto do Mar - Universidade de Coimbra, Portugal;[2] Centre de Recerca Ecologica i Aplicacions Forestals, Spain;[3] Leibniz Universitat Hannover, Germany

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[1] University of New England, Australia;[2] NSW Department of Primary Industries, Australia

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Abdalla Mohamedin
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Karamat Sistani[1]*, Jason Simmons[2] and Jeff Novak[2]
[1] USDA, USA;[2] USDA-ARS, USA

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[1] Northwest A&F University, China;[2] Nanjing Agricultural University, China;[3] Pir Mehr Ali Shah Arid Agriculture University, Pakistan

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[1] JNanjing Agricultural University, China;[2] University of Gottingen, Germany

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[1] Aarhus University, Denmark;[2] Basel University, Swaziland

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Asfaw Bekele[1]*, Julie Roy[2] and Michelle Young[1]
[1] Imperial Oil Resources, Canada;[2] Imperial Oil Limited, Canada

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Jun Shan and Xiaoyuan Yan
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Chen Liu and Xiang-Yu Tang*
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[1] Zhejiang University, China;[2] Hangzhou Normal University, China

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[1] Griffith University, Australia;[2] Yangzhou University, China;[3] NSW Department of Primary Industries, Australia;[4] University of the Sunshine Coast, Australia

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Saqib Saleem Akhtar[1]*, Mathias Neumann Andersen[2] and Fulai Liu[1]*
[1] University of Copenhagen, Denmark;[2] University of Aarhus, Denmark

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Kimmo Rasa* and Kari Ylivainio
MTT Agrifood Research Finland, Finland

P2-98 **Phosphorus Bioavailability of Sewage Sludge Biochar Applied to Temperate and Tropical Soils in Japan**
Shinjiro Sato* and Hideki Kawamata
Soka University, Japan

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Jin Tak
Alberta Innovates - Technology Futures (AITF), Canada

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Sellamuthu K M[1]*, Duraisami V P[1] and Venkatachalam P[2]
[1] Tamil Nadu Agricultural University, India;[2] Agricultural College and Research Institute, India

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Sebastian Meier[1], Mara Cea[1], Gustavo Curaqueo[1], Naser Khan[2], Catalina Vidal[1], Nanthi Bolan[3] and Fernando Borie[1]
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Joyce Clemente*, Suzanne Beauchemin*, Ted Mackinnon, Yves Thibault, Rolando Lastra, Derek Smith and Bryan Tisch
Natural Resources Canada, CANMET, Canada

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Angela Joy Eykelbosh[1]*, Edmar Santos Queiroz[2], Higo Jose Dalmagro[2], Mark S. Johnson[1], Ricardo S. S. Amorim[2] and Eduardo Guimaraes Couto[2]
[1] University of British Columbia, Canada;[2] Universidade Federal de Mato Grosso, Brazil

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Junhui Li[1], Qihong Lu[2], Chongjian Jia[1], Ying Chen[3], Ying Lu[1]* and Hojae Shim[2]*
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Ayodele Ajayi[1]*, Rainer Horn[2] and Wibke Baumgarten[2]
[1] Federal University of Technology, Nigeria;[2]CAU Kiel, Germany

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Peter Quin[1], Annette Cowie[2], Richard Flavel[1], Brad Keen[3], Lynne Macdonald[4], Stephen Morris[5], Bhupinderpal Singh[3], Iain Young[1] and Lukas Van Zwieten[3]*
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Qian Li and Pan Genxing*
Nanjing Agricultural University, China

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Guo Long
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Zhe Weng[1]*, Lukas Van Zwieten[2], Bhupinderpal Singh[2], Stephen Kimber[2], Annette Cowie[3] and Stephen Morris[2]
[1] University of New England, New South Wales Department of Primary Industries, Australia;[2] New South Wales Department of Primary Industries, Australia;[3] University of New England, Australia

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[1] National Taiwan University, Taiwan;[2] National Synchrotron Radiation Research Center, Taiwan;[3] Institute of Forest SB RAS, Russia

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Phuong Nguyen1* and Anthony Weatherley[2]*

[1] CanTho University, Viet Nam;[2] The University of Melbourne, Australia

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[1] University of the Basque Country, Spain;[2] FNEIKER-Tecnalia, Spain

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[1] University of Newcastle, Australia;[2] BDM Resources, Hamilton, Australia

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[1] Technical University of Cartagena, Spain;[2] University of Saskatchewan, Canada

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[1] Federal University of Technology, Nigeria;[2] CAU Kiel, Germany

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[1] Technical University of Cartagena, Spain;[2] University of Saskatchewan, Canada

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[1] National Research Council (Cnr), Italy;[2] University of Florence, Italy;[3] University of Tuscia, Italy

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[1] Vanavarayar Institute of Agriculture, India;[2] Central Institute for Cotton Research, India;[3] Dr. Mahalingam College of Engineering and Technology, India

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[1] Central Institute of Mining and Fuel Research, India;
[2] University of South Australia, Australia;[3] University of Queensland, Australia;[4] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, Australia

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[1] Zhejiang A & F University, China;[2] Zhejiang University of Technology, China;[3] University of Auckland, New Zealand

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[1] Jilin Agricultural University, China;[2]Chinese Academyof Sciences, China

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[1]Chinese Academy of Sciences, China;[2] University of Hohenheim, Germany;[3] Pacific Northwest National Laboratory, USA

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[1] University of the West Indies, St. Augustine, Trinidad&Tobogo;[2] University of Guelph, Canada

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[1] The University of Auckland, New Zealand;[2] Auckland Council, New Zealand

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[1] Institute of Fundamental Studies, Sri Lanka;[2] Faculty of Agriculture, Sri Lanka

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[1] Purdue University - College of Agriculture, USA;[2] Natural Resources Canada, Canada

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[1] National Taiwan University, Taiwan;[2] Van Nung University, Taiwan

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[1] Chinese Academy of Sciences, China;[2] Agriculture, Food and Environment SolutioNZ, New Zealand;[3] AgResearch, New Zealand;[4] University of South Australia, Australia

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Min-Suk Kim[1], Hyun-Gi Min[1], Nguyen Huyen Trang[1], Byeongjoo Lee[1], Jeongsik Park[2], Namin Koo[3] and Jeong-Gyu Kim[1]*
[1] Korea University, Korea;[2] Korea Testing & Research Institute, Korea;[3] Korea Forest Research Institute, Korea

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[1] Korea University, Korea;[2] Sungkyunkwan University, Korea

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[4] Yonsei University, Korea;[5] University of Alberta, Canada

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[1] Chosun University, Korea;[2] Kwangwoon University, Korea;
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[1] Institute of Fundamental Studies, Sri Lanka; [2] Umm Al-Qura University, Saudi Arabia;[3] Kangwon National University, Korea;[4] RDA, Korea;[5] Chosun University, Korea

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[1] Suez Canal University, Egypt;[2] Kangwon National University, Korea;[3] University of Gottingen, Germany

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Hyuck-Soo Kim[1], Kwon-Rae Kim[2], Ga-Hee Lim[1], Yong-Sik Ok[3] and Kye-Hoon Kim[1]*
[1] University of Seoul, Korea;[2] Gyeongnam National University of Science and Technology, Korea;[3] Kangwon National University, Korea

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[1] GyeongSang National University, Korea;[2] Sunchon National University, Korea

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Hyuck-Soo Kim[1], Kwon-Rae Kim[2], Ho-Wan Son[1], Yong-Sik Ok[3] and Kye-Hoon Kim[1]*
[1] University of Seoul, Korea;[2] Gyeongnam National University of Science and Technology, Korea;[3] Kangwon National University, Korea

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[1] GyeongSang National University, Korea;[2] Sunchon National University, Korea

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[1] Sunchon National University, Korea;[2] Gyeongsang National University, Korea

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[1] Sunchon National University, Korea;[2] Gyeongsang National University, Korea

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[1] Sunchon National University, Korea;[2] Gyeongsang National University, Korea

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[1] Sunchon National University, Korea;[2] Gyeongsang National University, Korea

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Gabriel Nkomo*
Africa University, Zimbabwe

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Afshin Mozafari*
Islamic Azad University (IAU), Iran

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Jayvee Cruz[1] and Erlinda Paterno[2]
[1] Philippine Rice Research Institute, Philippines;[2] University of the Philippines Los Banos, Philippines

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Sumitra Dewan[1]*, Hans Goransson[1], Andy R. Smith[2], Giovanbattista De Dato[3], Andreas Schindlbacher[4] and Douglas L. Godbold[1]
[1] University of Natural Resources and Life Science(BOKU), Austria;[2] Bangor University, United Kingdom;[3] University of Tuscia, Italy;[4] Natural Hazards and Landscape - BFW, Austria

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Yangping Li[1]* and Yulong Feng[2]*
[1] Chinese Academy of Science, China;[2] Shenyang Agricultural University, China

P2-206 **Iron-Reducing and Sulphate-Reducing Bacterial Populations' Dynamics and Activities in Rice Paddy Soil under Subsurface Drainage**
Otoidobiga Cecile Harmonie
Centre Regional en Science Biologique, alimentaire et Nutritionnellr, Burkina Faso

P2-207 **Microbial Community Diversity of Forest Soils in Northeastern and North Central USA**
Mary Beth Adams*
USDA Forest Service, USA

P2-208 **Bioaccumulation and Biosorption of Heavy Metals from Aqueous Solutions by Isolated Bacteria from Contaminated Soils**
Rahim Mohammadzadeh Karkaragh[1]*, Mostafa Chorom[1], Hossein Motamedi[1] and Yusef Kianpoor Kalkhajeh[2]
[1] Shahid Chamran University of Ahvaz, Iran;[2] Copenhagen University, Denmark

P2-209 **Differential Response of Single-, Co- and Multi-Strain Inoculation of PGPR for Improving Growth, Physiology and Nutrient Balance of Maize Under Salinity Stress**
Muhammad Yahya Khan*, Muhammad Usman Jamshaid, Tasawar Abbas, Hafiz Naeem Asghar and Zahir Ahmad Zahir
University of Agriculture Faisalabad, Pakistan

P2-210 **Microbial Dynamics in Salt Affected Soils**
Zahir Shah* and Asif Shah
The University of Agriculture, Pakistan

P2-211 **Functional Resilience and Soil Biota Dynamics in Rain-Fed Agroecosystems**
Vadakattu Gupta[1] and David Coleman[2]
[1] CSIRO, Australia;[2] University of Georgia, USA

P2-212 **Arbuscular Mycorrhizal Fungal Diversity Associated with Tea Plant (Camelia Sinensis) Roots under Inorganic and Organic Fertilization in Acidic Soil in the East Black Sea Region of Turkey**
Kazuki Suzuki[1], Oguz Can Turgay[2], Muhittin Onur Akca[2], Ali Ergul[2], Naoki Harada[1] and Masanori Nonaka[1]*
[1] Niigata University, Japan;[2] Ankara University, Turkey

P2-213 **Changes of Soil Microbial Community Structure During Soil Mineralization under Two Kinds of Shrubland in Mountainous Area of Southern Ningxia, Northwest China**
Huang Yi-Mei*, Yan Hao and Jiang Yue-Li
Northwest A&F University, China

P2-214 **Identification of Carbon Flow Derived from Callus Mediated BYT4-Type Bacteriophages in Microbial Loop in Rice Soil**
Yong Li[1]*, Takeshi Watanabe[2], Jun Murase[2], Susumu Asakawa[2] and Makoto Kimura[2]
[1] Zhejiang University, China;[2] Nagoya University, Japan

P2-215 **The Effects of Freeze-And-Thaw Cycles on Ammonium and Nitrate Availability in Highland Soils in Turkey**
Adem Gunes[1], Metin Turan[2]*, Hilal Samray[3] and Ertan Yildirim[4]
[1] Erciyes University, Turkey;[2] Yeditepe University, Turkey;
[3] T.R. Ministry of Food, Agriculture and Livestock, Turkey;
[4] Ataturk University, Turkey

P2-216 **Significance of Arbuscular Mycorrhizal Fungi Inoculation on Tuber Yield of Dioscorea Alata under Moisture Stress Condition**
Odoh, N.[1,2], Lopez-Montes, A.[2], Oluwasemire K.,[1] Abaidoo, R.[2] and Asiedu, R.[2]
[1] University of Ibadan, Nigeria; [2]International Institute for Tropical Agriculture, Nigeria

P2-217 **Effect of Halophilic Bacteria-Producing Exopolysaccharide on Some Growth Parameters of Wheat in Saline Soils**
Ahmad Ali Pourbabaee*, Maryam Talebi Atouei and Mehdi Shorafa
University of Tehran, Iran

P2-218 **Glomalin in Alpine Soil Along an Tibetan Altitudinal Gradient is Highly Correlated with Hyphae Growth but Not Community Composition of Arbuscular Mycorrhizal Fungi**
Xiaoliang Li[1], Xiaobu Cai[2], Xiaolin Li[1] and Junling Zhang[1]*
[1] China Agricultural University, China;[2] Tibet University, China

P2-219 **Assessing Enzyme Activities Changes of Superoxide Dismutase and Catalase in Canola under Salinity Stress**
Babak Motesharezadeh* and Nader Khadem Moghadam
University of Tehran, Iran

P2-220 **Recovery of Soil Microbial Biomass and Enzyme Activities across the Chronosequence of Forest Fires in Northern Boreal Forests in Finland**
Kajar Koster[1]*, Frank Berninger[2], Jussi Heinonsalo[2], Aki Linden[2], Egle Koster[2] and Jukka Pumpanen[2]
[1] Estonian University of Life Sciences, Estonia;[2] University of Helsinki, Finland

P2-221 **Heathland Response to Nitrogen Deposition: Effects of Form and Frequency**
Muhammad Adrees[1] and Sally Power[2]
[1]Government College University, Faisalabad-Pakistan Imperial College London, Pakistan;[2] Imperial College London, United Kingdom

P2-222 **Nitrogen Deposition: A Modifier of Plant Response to Ozone?**
Muhammad Adrees[1] Sally Power[2], Emma Green[2] and Nathan Callaghan[2]
[1] Government College University, Faisalabad-Pakistan Imperial College London, Pakistan;[2] Imperial College London, United Kingdom

P2-223 **Biochar Addition to Soil Alters its Resilience to Drought**
Chen Fei Liang[1], Shenglei Fu[1], Gabriel Gasco[2], Ana Maria Mendez[2] and Jorge Paz-Ferreiro[2]*
[1]South China Botanical Garden, China;[2] Universidad Politecnica de Madrid, Spain

P2-224 **The Impact of Pleurotus Ostreatus on Transformation Processes of Organic Matter and Metal Ions from Enriched Organic And Mineral Soils of Spent Oil**
Izabella Pisarek* and Mariusz Glowacki
Opole University, Poland

P2-225 **Modifying Rhizospheric System for Soil Carbon Sequestration**
Purushothaman Chirakkuzhyil Abhilash*
Banaras Hindu University, India

P2-226 **Ecology of Halophilic Microbes Associated with Dominant Halophytes and Salt Tolerant Plants from Coastal Saline Ecosystem**
Sanjay Arora[1], Riddhi Mehta[2] and Meghna Vanza[2]
[1] Regional Research Station, India; [2] V.N. South Gujarat University, India

P2-227 **Potential Use of Microbial Inoculums in Ameliorating Soil Salinity Impact on the Productivity of Faba Bean (vicia Faba)**
Ibrahim Elakhdar*
ARC, Egypt

P2-228 **Effects of Elevated Ozone on Soil Microbial Community Composition and Metabolic Diversity Depending on the Ozone-Tolerance of Wheat Cultivars**
Qi Li[1]*, Xuelian Bao[1,2], Wenju Liang[1], Caiyan Lu[1] and Jianguo Zhu[1]
[1] Chinese Academy of Sciences, China;[2] University of Chinese Academy of Sciences, China

P2-229 **Molecular Analysis on Fungal Community Structures and Diversity in Different Fertilization Management Practices in Volcanic Ash Citrus Orchard Soil**
Jae-Ho Joa[1]*, Hang-Yeon Won[2], Bong-Nam Chung[1], Kyung San Choi[1] and Seong-Cheol Kim[1]
[1] National Institute of Horticultural & Herbal Science, Korea;[2] National Academy of Agricultural Science, Korea

P2-230 **Comparison of Spatial Interpolation Methods for Estimation of Air Temperature**
Seok-Cheol Kim, Yong-Seok Kim*, Myung-Pyo Jung and Kyo-Moon Shim
Rural Development Administration, Korea

P2-231 **Isolation and Characterization of Arbuscular Mycorrhizal Fungi Spore Associated Bacteria from Saemangeum Reclaimed Soil**
Gopal Selvakumar, Kiyoon Kim, Ramasamy Krishnamoorthy, Parthiban Subramanian and Tongmin Sa*
Chungbuk National University, Korea

P2-232 **Assessment of Heavy Metals Incorporated into Soil Microbial Biomass with a Direction Chloroform Extraction Method**
Jongchan Park[1], Seokho Jung[1], Bomin Kang[1], Eunjin Lee[1], Dongwook Kim[2] and Gwang Hyun Han[1]*
[1] Chungbuk National University, Korea;[2] Phygen Inc, Korea

P2-233 **Psychrophilic Characteristics and Plant Growth Promotion Effect of Pseudomonas Vancouverensis OB155 in Tomato (solanum Lycopersicum)**
Parthiban Subramanian, Kiyoon Kim, Ramasamy Krishnamoorthy, Mak Chanratana and Tongmin Sa*
Chungbuk National University, Korea

P2-234 **Structural and Functional Changes in Soil Microbial Community in Response to Heavy Metal Contamination as Assessed by Culture-Dependent and Biochemical Analysis Techniques**
Denver Walitang[1], Murugesan Chandrasekaran[1], Sherlyn Tipayno[2], Seifeddine Ben Tekaya[1] and Tongmin Sa[1]*
[1]Chungbuk National University, Korea;[2] Benguet State University, Philippines

P2-235 **Effect of ACC Deaminase Producing PGPR Strains Inoculation on the Growth and Nutrient Accumulation of Maize and Sorghum-Sudangrass Hybrid in Saemangeum Reclaimed Soil**
Kiyoon Kim, Ramasamy Krishnamoorthy, Parthiban Subramanian, Gopal Selvakumar and Tongmin Sa*
Chungbuk National University, Korea

P2-236 **Arbuscular Mycorrhizal Fungi Inoculation Modulates Plant Responses to Soil Salinity with Respect to Biomass, Nutrient Uptake, and Proline Accumulation: A Meta-Analysis**
Murugesan Chandrasekaran, Denver Walitang, Mak Chanratana, Chaemin Kwak and Tongmin Sa*
Chungbuk National University, Korea

P2-237 **Effect of ACC Deaminase Producing Methylobacterium spp. on Seedling Development and Ethylene Emission under Greenhouse Condition**
Mak Chanratana, Woojong Yim, Kiyoon Kim, Youngwook Lee and Tongmin Sa*
Chungbuk National University, Korea

P2-238 **A New Report on Plant Growth Promotion and Antagonistic Potential of Pigmented Facultative Methylotrophic Bacteria (delftia Sp And Bacillus Spp.) against Root Pathogens in Tomato**
Subbiah Sundaram[1], Veeranan Janahiraman[2], Rangasamy Anandham[2] and Tongmin Sa[1]*
[1] Chungbuk National University, Korea;[2] Agricultural College and Research Institute, India

P2-239 **Effect of Varying Levels of Salinity on EPS Production and Biofilm Formation by Halotolerant Bacteria**
Youngwook Lee, Bohui Hong, Chaemin Kwak, Jaehong Kim and Tongmin Sa*
Chungbuk National University, Korea

P2-240 **Exopolysaccaride Production, Intracellular Carbon Accumulation and Stress Tolerance of Methylobacterium Strains under High Carbon Conditions**
Chaemin Kwak[1], Sungman Woo[2], Murugesan Chandrasekaran[1], Denver Walitang[1] and Tongmin Sa[1]*
[1] Chungbuk National University, Korea;[2] Division of Maize Research Institute, Cambodia

C1.1-1: The Role of Environment on Soil formation: Morphological Indicators

Soil Art *Featured artist: Jay Stratton Noller, Oregon State University, Department of Crop and Soil Science, USA, soilscapestudio.com*

P2-241 **Soil Morphology as an Indicator for Assessment of Drainage System Efficiency in Sugarcane Cultivated Lands, South Khuzestan, Iran**
Marjan Ansari Dezfoul[1]*, Shahla Mahmoudi[2], Mohammad Hasan Masih Abadi[1] and Abed Ali Naseri[3]
[1] Islamic Azad University, Iran; [2] Tehran University, Iran; [3] Chamran University, Iran

P2-242 **Inventory of Pedoturbation in Some Heavy Clay Soils of Bangladesh**
Md. Jashim Uddin* and Asm Mohiuddin
University of Dhaka, Bangladesh

P2-243 **Hillslope Soils of Khao Yai Area, Nakhorn Ratchasima Province, Northeast Thailand**
Pornthiwa Kanyawongha[1]* and Anongnat Sriprachote[2]
[1] King Mongkut's Institute of Technology Ladkrabang, Thailand;[2] Kasetsart University, Thailand

P2-244 **tructural Analysis of Soil Cover on the Watershed of Ribeirao Feijao-SP, Brazil**
Ana Cerminaro*
Universidade de Sao Paulo-USP, Brazil

P2-245 **Micromorphological Diagnostics of Pedogenetic Processes in Loamy Cambisols in Middle Taiga Zone of Western Siberia**
Julia Golovleva*
Lomonosov Moscow State University, Russia

P2-246 *(Moved to O27-5)***Digital Soil Mapping and Classification for Sustainable Crop Cultivation in Northeast, Akwa Ibom State, Nigeria Using Digital Elevation Model and Geographic Information System**
Udeme Akpan*
University of Uyo, Nigeria

P2-247 **Morphological Properties of Soil Compaction in a Steppe Zone**
Alexey Sorokin[1]*, Konstantin Abrosimov[2], Marina Levedeva-Verba[2] and Tolpeshta Inna[1]
[1] Lomonosov Moscow State University, Russia;[2] Dokuchaev Soil Institute of Russian Academy of Agricultural Science, Russia

P2-248 **An Index of Soil Structure Derived from Water Retention Data and Particle Size Distribution**
Daniel Gimenez[1]*, Attila Nemes[2], Daniel Hirmas[3] and Sigrun Kvaerno[2]
[1] Rutgers University, USA;[2] Bioforsk. Norwegian Institute for Agricultural and Environmental Research, Norway;[3] University of Kansas, USA

P2-249 **Transformations of the Primary Soil Cover in Different Types of Land Use**
Bogusława Przewozna*
Institute of Geography and Spatial Organization PAS, Poland

P2-250 **Modification of Soil Map in Accordance with Rapid Regional Changes in Land Use**
Byung-Keun Hyun, Yeon-Kye Sonn, Chan-Won Park, Hyun-Jun Cho, Hyen-Chug Chun, Kwan-Cheol Song and Dae-Cheol Noh
RDA, Korea

C1.2-1: Pedodiversity and Ecological Services-Bridging Soil Geography and Land Use

Soil Art *Featured artist: Elvira Wersche, Stiftung Sammlung Weltensand, Netherlands, www.elvirawersche.com*

P2-251 **Indegenous Knowledge of Soil Classification and Srategies of Land Use**
Kissou Roger
The Soil Science Society of Burkina Faso (SSSBF), Burkina Faso

P2-252 **Analysis of Dike Natural Subsidence Caused by Mining under River**
Gong Xu*, Xiaoqing Su and Guoqing Qu
Shandong University of Technology, China

P2-253 **Sedimentation Hazards and Sustainable Land Management: A Case Study of the Lobar Haor, Bangladesh**
Shaikh Tanveer Hossain[1]* and Md. Jashim Uddin[2]
[1] Friends In Village Development Bangladesh (FIVDB), Bangladesh;[2] University of Dhaka, Bangladesh

P2-254 **Colluvial Deposits as Proxies for the Kind and Intensity of Human Activities in Southwest Germany**
Jessica Henkner*, Jan Ahlrichs, Thomas Knopf, Thomas Scholten and Peter Kuehn
Tuebingen University, Germany

P2-255 **Retracing Signals of Historical Soil Erosion in Peatbog Archives as an Indicator for Landscape Resilience in the Context of Future Landuse Changes and Weather Fluctuations (tum-Czo, Ammer Mts.)**
Joerg Voelkel and Jennifer Winkelbauer
Technische Universitaet Muenchen TUM, Germany

P2-256 **Peculiarities of Tundra Soil in the Northeastern Yakutia**
Alexandra Ivanova* and Roman Desyatkin
Institute of Biological Problems of Cryolithozone SB RAS, Russia

P2-257 **Post-Agrogenic Self-Restoration of Soddy Podzolic Soils: Results and Methods N.P. Sorokina, D.N. Kozlov, I.B. Kuznetsova**
Natalia Sorokina[1], Daniil Kozlov[2] and Inna Kuznetsova[1]
[1] V.V.Dokuchaev Soil Science Institute, Russia;[2] Lomonosov Moscow State University, Russia

P2-258 **Soil Cover Patterns Influence on Ecosystem Services and Land-Use Efficiency in Case of Central Russia Native and Agro Ecosystems**
Ivan Vasenev*, Mikhail Geraskin and Ivan Yashin
Russian Timiryazev State Agricultural University, Russia

C1.3-1: Weathering and Soil formation in Response to Environmental Changes

P2-259 **Minerals of Coarse Fraction and their Distribution in the Podzol Profile (Komi Republic, RF)**
Evgeny Pogozhev[1]*, Yulia Zhukova[2] and Alexey Petelin[3]
[1] Ecology and Geomonitoring, Russia;[2] Lomonosov Moscow State University, Russia;[3] EC Ecosoil-LD, Russia

P2-260 **Genesis, Mineralogy and Classification of Highly Calcareous Soil of Southern Iran**
Abolfazl Azadi* and Majid Baghernejad
Shiraz University, Iran

P2-261 **The Effect of Topography on Soils Properties and their Classification in the Chelgerd Region, Iran**
Mohammadhassan Salehi* and Mozhgan Sarshogh
Shahrekord University, Iran

P2-262 **Early Alteration of Pristine Tephra Grain Induced by Microorganism**
Dian Fiantis[1], Malik Nelson[1], Jusop Shamshuddin[2], Tee Boon Goh[3] and Eric Van Ranst[4]
[1] Andalas University, Indonesia;[2] Universiti Putra Malaysia, Malaysia;[3] University of Manitoba, Canada;[4] Ghent University, Belgium

P2-263 **Global Changes of the Soil-Forming Process in the North Caucasus Chernozems in the Argocenosis Conditions**
Valeriy Tshovrebov[1], Vera Faizova[1] and Viktor Terpelez[2]
[1] Stavropol State Agrarian University, Russia;[2] Kuban State Agrarian University, Russia

P2-264 **Effects of Land Use/cover Changes on Soil properties in a Dryland Watershed of Hirmi and its Adjacent Agro Ecosystem: Northern Ethiopia**
Tsehaye Mezgebe and Tsehaye Mezgebe
Aksum University, Ethiopia

P2-265 **Translocation of Silicon and its Isotopic Characteristics in Granite-Derived Soils in a Typical Subtropical Ecosystem**
Jin-Ling Yang and Gan-Lin Zhang*
Chinese Academy of Sciences, China

P2-266 **Genesis of Soils by Solodization around Degraded Saline Lakes of Pantanal Wetland, Brazil**
Sheila Furquim[1]*, Bruna Bonomo[1] and Arnaldo Sakamoto[2]
[1] Universidade Federal de Sao Paulo (UNIFESP), Brazil;[2] Universidade Federal do Mato Grosso do Sul (UFMS), Brazil

P2-267 **Slope Deposits of Different Genesis and Ages in the Colorado front Range (Rocky Mts.) and their Significance for Chemical Weathering fluxes within the Critical Zone (cz)**
Joerg Voelkel and Juliane Huber
Technische Universitaet Muenchen TUM, Germany

P2-268 **Does Pedogenetic Carbonation Play Insignificant Role in Atmospheric CO2 Sequestration?**
Emohamed Maryol[1] and Chuxia Lin[2]*
[1] University of Southern Queensland, Australia;[2] University of Salford, United Kingdom

P2-269 **Soil Formation along a Catena in South-Eastern Caspian Sea Lowland**
Ogholsona Gholizadeh, Farhad Khormali*, Arash Amini and Farshad Kiani
Golestan University, Iran

P2-270 **Effect of Slope Aspect on Soil Formation on a Loess Hillslope in Golestan Province, Iran**
Farhad Khormali*, Ebrahim Mohammadi and Sedigheh Maleki
Gorgan University of Agricultural Sciences and Natural Resources, Iran

P2-271 **Arsenic Sources in Soils of Bijar Region, Kurdistan Province, Iran**
Ahmad Heidari[1]* and Kamal Nabiollahi[2]
[1] University of Tehran, Iran;[2] University of Kurdistan, Iran

P2-272 **Soil Genesis on Different Slope Positions in a Loess Hillslope in Golestan Province, Iran**
Ebrahim Mohammadi, Farhad Khormali*, Abolfazl Bameri, Sedigheh Maleki, Mojtaba Barani Motlagh and Farshad Kiani
Gorgan University of Agricultural Sciences and Natural Resources, Iran

P2-273 **Soil Mineral Transformations, Weathering Rates and U/th Mobility in Moraine Deposits in an Sub-Alpine Environment in California, USA**
Felipe Aburto* and Randal J. Southard
University of California, Chile

P2-274 **Spatial Pedogenic Process Distribution in the Soils of Oued Righ Valley (North East Sahara) an Morphoscopic and Mineralogical Approach**
Boumaraf Belkacem[1]*, Rabah Bensaid[2] and Marre Alain[3]
[1] University of Biskra, Algeria;[2] University of Skikda, Algeria;[3] University of Reims Champagne Ardenne, France

P2-275 **Rates and Controlling Factors of Magnetic Depletion and Enhancement Processes during the 1000-Year Evolution of Paddy and Non-Paddy Soil Chronosequences**
Liu-Mei Chen, Gan-Lin Zhang* and Zhang-Dong Jin
Chinese Academy of Sciences, China

P2-276 **Soil Profile of Yellow-Brown Earth Overlying Red Clay in Southern Anhui Province: A Pedogenic Response to the Last Glacial-Interglacial Cycle in Mid-Subtropical China**
Xue-Feng Hu*, Yan Du and Yong Xue
Shanghai University, China

P2-277 **Carbon Dating of Latosols (oxisols) and Implications to Soil (bio)genesis in Cerrado (savanna) Areas in Brazil**
Carlos Schaefer[1], Rafael Tonucci[2] and Julio Cesar Lima Neves[1]
[1] Federal University of Vicosa, Brazil;[2] Embrapa Caprinos e Ovinos, Brazil

P2-278 **Effect of Mineral Dissolution on Hydraulic and Transport Properties of Floodplain Soils**
Sabine Schaefer and Kai Uwe Totsche*
Friedrich Schiller University Jena, Germany

P2-279 **Testing a New Method For Sequential Si-Extraction on Soils of a Temperate-Humid Climate**
Anna Georgiadis[1], Daniela Sauer[1], Ludger Herrmann[1], Jorn Breuer[2], Mehdi Zarei[1] and Karl Stahr[1]*
[1] University of Hohenheim, Germany;[2] Karlsruhe Augustenberg, Germany

P2-280 **Characteristics and Genesis of Two Profiles Developed From Amphibolite Complex Rocks in Southwestern Nigeria**
Sikiru Muda[1]*, Temitope Okusami[1] and Oladipo Omotoso[2]
[1] Obafemi Awolowo University, Ile-Ife, Nigeria;[2] Energy Technology & Programs Sector Natural Resources Canada, Canada

P2-281 **Changes in Soil Mineral Composition by Surface-Piled Saprolite**
Yongseon Zhang[1], Gang-Ho Jung[1]*, Yong-Hee Moon[2], Hyere Cho[1], Yeon-Kyu Sonn[1] and Kyeong-Hwa Han[1]
[1] National Academy of Agricultural Science, Korea;
[2] National Geo-parks Secretary, Korea

C1.5-2: Quantification and Application of Uncertainty in Pedometrics

Soil Art *Featured artist: Ekkeland Götze, Germany, Terragraphy – An Image of the Earth, www.ekkeland.de*

P2-282 **Sampling Design and the Predictive Accuracy of Pedotransfer Functions**
Abdur Rab[1]*, Subhash Chandra[2] and Mark Imhof[2]
[1] Victorian Government Department of Environment and Primary Industries, Australia;[2] Future Farming System Research Division, Australia

P2-283 **Analysis of the Spatial and Depth-Wise Variation of Soil Properties Based on Horizon-Sampled Data**
Thomas Orton[1]*, Ana Horta[1], Matthew Pringle[2] and Thomas Bishop[1]
[1] University of Sydney, Australia;[2] Queensland Government, Australia

P2-284 **Spatial Uncertainty in 3D Modelling of Soil Properties**
Laura Poggio* and Alessandro Gimona
The James Hutton Institute, United Kingdom

P2-285 **Prediction of Soil Organic Carbon and Texture in Complex Areas Using Vis-Nir Spectroscopy**
Ricardo Simao Diniz Dalmolin[1]*, Andre Dotto[1], Fabricio De Araujo Pedron[1], Alexandre Ten Caten[2] and Andrea Machado Pereira Franco[1]
[1] Federal University of Santa Maria, Brazil;[2] Federal University of Santa Catarina, Brazil

P2-286 **Grey Incidence Analysis (gia): A New Local Method for Modeling Chinses Soil Vis-Nir Spectral Library to Predict Soil Total Nitrogen Content**
Qianlong Wang and Zhou Shi*
Zhejiang University, China

P2-287 **Probability-Based Harmonization of Digital Maps to Produce Conceptual Soil Maps**
Istvan Sisak* and Andras Beno
University of Pannonia Georgikon Faculty, Hungary

P2-288 **Cybersolim: An Easy and Fast Online Digital Soil Mapping Prototype System**
Jingchao Jiang, Axing Zhu* and Yiming An
Institute of Geographic Sciences and Natural Resources Research, CAS, China

P2-289 **A Multi-Grade Representative Sampling Strategy Using Auxiliary Environmental Variables for Regional Soil Mapping: A Case Study in Xuancheng, Anhui, China**
Lin Yang, Shujie Zhang, A-Xing Zhu and Yiming An
CAS, China

P2-290 **Uncertainties Assessment of Semivariogram Parameters and Maps Comparison for Soil Properties with Different Nugget Effects**
Joulia Meshalkina* and Vera Samsonova
Moscow Lomonosov State University, Russia

C1.6: Paleopedology

Soil Art *Featured artist: Smudge Studio (Jamie Kruse and Elizabeth Ellsworth), USA, Siting the Geologic, www.smudgestudio.org*

P2-291 **Soil Micromorphology from Bronze Age Indus Settlements and Surroundings: Reconstruction of Mid-Holocene Environmental Conditions in Nw India**
Sayantani Neogi
University of Cambridge, United Kingdom

P2-292 **Climate Change and Human Impacts on the Soils of Koufonissi, Cycladic Islands Greece**
Sean Taylor
University of Cambridge, United Kingdom

P2-293 **Deep Soil Carbon: Why Should We Care?**
Podjanee Sangmanee*, Richard Harper, David Henry and Bernard Dell
Murdoch University, Australia

P2-294 **Buried Paleoanthrosols of the Bronze Age Agricultural Terraces in Kisovodsk Basin (Northern Caucasus, Russia)**
Alexandr Borisov[1]*, Elena Chernysheva[1] and Dmitry Korobov[2]
[1] Institute of Physicochemical and Biological Problems in Soil Science of the Russian Academy of Science, Russia; [2] Institute of Archaeology of the Russian Academy of Sciences, Russia

P2-295 **Late Quaternary Environmental Changes from Aeolian and Fluvial Geoarchives in the Southwestern Kalahari, South Africa: Implications for Past African Climate Dynamics**
Joerg Voelkel
Technische Universitaet Muenchen TUM, Germany

P2-296 **Approach for Categorization of Highly Heterogeneous Cultural and Colluvial Sediments on Detailed Spatial Scale: Example of the Early Medieval Viking-Settlement Hedeby**
Svetlana V. Khamnueva*, Jann Wendt, Andrey V. Mitusov, Stefan Dreibrodt and Hans-Rudolf Bork
Christian-Albrechts University of Kiel, Germany

P2-297 **Lateglacial to Holocene Formation of Loess-Paleosol-Colluvial Deposit Sequences in Central Europe: Climate Change and Human Impact**
Peter Kuhn[1]* and Markus Fuchs[2]
[1] Eberhard Karls University Tubingen, Germany; [2] Justus-Liebig-University Giessen, Germany

P2-298 **Pedology around a 6700 Year Old Neolithic Ring Ditch System in Germany**
Matthias Leopold[1]* and Jorg Volkel[2]
[1] University of Western Australia, Australia; [2] Technical University of Munich, Germany

P2-299 **Quantitative Distribution of Phytoliths as a Reliable Diagnostical Criteria of Ancient Arable Lands**
Alexandra Golyeva and Natalia Svirida
Institute of Geography RAS, Russia

P2-300 **A Multi-Proxy Approach for Interpreting the Effects of Climate Change on Intensely Welded Loess-Palaeosols**
K. Vancampenhout [1,2], R. Langohr [3], J. Slaets [4], G. Dercon [4], P. Buurman [5], R. Swennen [1] and J. Deckers [1]
[1] K.U. Leuven, Belgium; [2] KU Leuven Campus Geel, Belgium; [3] Gent University, Belgium; [4] University of Hohenheim, Germany; [5] Wageningen University, The Netherlands

C2.1-2: Biophysical Aspects of Soil Function - Exploring Soil Hidden Frontiers

P2-301 **Distribution of Soil Textures in Chinese Flue-Cured Tobacco Growing Regions and its Relationship with Tobacco Quality and Style**
Hongzhi Shi*, Yingli Song and Yuanyuan Yang
Henan Agricultural University, China

P2-302 **Compared to the Optimum Moisture Content and Mechanical Strength of Clay and Sand under Compaction**
Sahar Akhavan[1] and Mahmoud Shabanpur[2]*
[1] Gorgan University of Agricultural Sciences & Natural Resources-IRAN, Iran; [2] University of Guilan, Iran

P2-303 **Influence of Phosphate Sorption on Dispersion and Flocculation of Kaolinite**
Shigeyori Kosugi*, Takahiro Kisaki and Munehide Ishiguro
Hokkaido University, Japan

P2-304 **Energetic Aspect at Agriculture Production on Semidesert Conditions of Azerbaijan**
Akif Gerayzade[1]*, N. Mamedov[2], S. Kocharly[3], Ch. Gulaliyev[4], A. Jafarov[3] and A. Manafova[3]
[1] Institute of Soil Science and Agrochemistry, Azerbaidjan; [2] Baku State University, Azerbaidjan; [3] Institute of Soil Science and Agrochemistry, Azerbaidjan; [4] Institute of Geography Azerbaijan, Azerbaidjan

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Dung Viet Pham[1]*, Munehide Ishiguro[1] and Ha Thu Thi Tran[2]
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Seon Ah Hwang*, Hui-Soo Bae, Soo-Hwan Lee, Jong-Gook Kang, Yang-Yeol Oh, Sanghun Lee, Hong-Kyu Kim and Kyeong-Bo Lee
Rural Development Administration, Korea

P2-409 **Monitoring Chemical Properties of Up-Land Soils in Chungbuk Region**
Hyun-Ju Kim[1]*, Won-Il Choi[1], Sang-Young Lee[1], In-Gyu Song[1], Tae-Jung Kim[1], Mi-Rang Kim[1] and Sung-Su Kang[2]
[1] Chungbuk Agricultural Research and Extension Services, Korea;[2] National Institute of Agricultural Science and Technology, Korea

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P2-410 **Effect of Cattle Manure Inoculation with an Alkaline Phytase Producing Bacilli in Organic P Mineralization, Bacterial Community and Wheat P Uptake**
Daniel Menezes-Blackburn[1]*, Milko Jorquera[2], Nitza Inostroza[2], Ralf Greiner[1], Jacquelinne Acuna[2] and Maria De La Luz Mora[2]
[1] Max Rubner-Institut Federal Research Institute, Germany;[2] Universidad de La Frontera, Chile

P2-411 **Relationship between Vegetation Indices and Biological Activity of Different Types of Biological Soil Crusts**
Emilio Rodriguez-Caballero[1], Yolanda Canton[1]*, Sonia Chamizo[1], Isabel Miralles[2], Raul Ortega[1], Francisco Domingo[2] and Albert Sole-Benet[2]
[1] University of Almeria, Spain;[2] CSIC, Spain

P2-412 **Effect of Drying-Rewetting on Soil Microbial Biomass and Community Level Physiological Profile in Soil Amended with Wheat Straw**
Hao Chen, Lu Lai, Xiaorong Zhao*, Guitong Li and Qimei Lin
China Agricultural University, China

P2-413 **Effect Of Long-Term Fertilization On Soil Microbial Activities and Community Structure in Volcanic Ash Citrus Orchard Soil**
Jae-Ho Joa[1]*, Seong-Cheol Kim[1], Sang-Wook Koh[1], In-Chang Son[1] and Hae-Nam Hyun[2]
[1] National Institute of Horticultural & Herbal Science, Korea;[2] Jeju National University, Korea

P2-414 **Variibacter Gotjawalensis Gen. Nov., Sp. Nov., Isolated from Soil of a Gotjawal Forest**
Kwang Kyu Kim[1], Keun Chul Lee[1], Jong-Shik Kim[2], Dae-Shin Kim[3], Suk-Hyung Ko[3] and Jung-Sook Lee[1]*
[1] Korea Research Institute of Bioscience and Biotechnology, Korea;[2] Gyeongbuk Institute for Marine Bioindustry, Korea;[3] Research Institute for Hallasan, Korea

P2-415 **Microbial Functional Structure of Lava-Formed Gotjawal Soils in Jeju Island, Korea**
Jong-Shik Kim[1]*, Dae-Shin Kim[2] and Suk-Hyung Ko[2]
[1] Gyeongbuk Institute for Marine Bioindustry, Korea;[2] Research Institute for Hallasan, Korea

P2-416 **Comparison of Soil Characteristics and Soil Microbial Activities According to Sections of Hiking Trails for Hallasan National Park**
Seokhyung Ko[1]*, Jae-Ho Joa[2], Jong-Shik Kim[3], Jung-Goon Koh[1], Young-Hoan Yang[1] and Hae-Nam Hyun[4]
[1] Jeju Special Self-Governing Province, Korea;[2] RDA, Korea;[3] Gyeongbuk Institute for Marine Bioindustry, Korea;[4] Cheju National University, Korea

P2-417 **Characteristics of Soil and Soil Microbial Distribution by Gotjawal Terrain in Jeju Island**
Seokhyung Ko[1]*, Jae-Ho Joa[2], Jong-Shik Kim[3], Dae-Shin Kim[1], Chang-Hoon Shin[1], Young-Hoan Yang[1] and Hae-Nam Hyun[4]
[1] Jeju Special Self-Governing Province, Korea;[2] National Institute of Horticultural & Herbal Science, Korea;[3] Gyeongbuk Institute for Marine Bioindustry Uljin, Korea;[4] Cheju National University, Korea

P2-418 **Effects of Cover Crops on Nutrient Contribution and Soil Microbial Community in Organic Citrus Orchard in Jeju**
Yu Kyoung Kim*
Jeju Agricultural Research and Extension Services, Korea

P2-419 **Functions Recover after Fumigants Removal in Different Soils**
Chenglei Zhang, Hao Chen, Guitong Li* and Qimei Lin
China Agricultural University, China

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Abdulrasoul Alomran, Mohammad Alwabel and Hesham Ibrahim
King Saud University, Saudi Arabia

P2-421 **Drought Monitoring System for Austrian Agriculture - Agrodroughtaustria**
Erwin Murer[1]*, Josef Eitzinger[2], Andreas Schaumberger[3], Mirek Trnka[4] and Carmen Krammer[2]
[1] Federal Agency for Water Management, Austria;[2] University of Natural Resources and Life Sciences, Austria;
[3] Science and GIS, LFZ Raumberg Gumpenstein, Austria;
[4] Global Change Reseach Center AS CR, Czech Republic

P2-422 **A New Technique Placing White Painted Water-Filled Polyethylene Bottles on Soil Surface Beside Plant Bases to Reduce High Soil Temperature Damages**
A.H.M.Zulfiquar Ali[1] & Kiyoshi Ozawa[2]
[1] University of Dhaka, Bangladesh;[2] Meiji University, Japan

P2-423 *(Moved to O28-5)* **Soil Hydraulic Properties and Moisture Regime as Affected by Agronomic Management Practices in a Clayey Ultisol**
Jiazhou Chen* and Lirong Lin
Huazhong Agricultural University, China

P2-424 **The Effect of Mixing Zeolite in Soil with Application of Wastewater and Sewage Sludge on Lead in Lepidium Sativum**
Mohammad Hajabbasi and Noredin Hashemi
Isfahan University of Technology, Iran

P2-425 **How to Save Agricultural Production in Sahelian Zone Prone to Drought: Case of Burkina Faso**
Tapsoba Gisele*
Burkina Faso Soil Science Society, Burkina Faso

P2-426 **Shade and Water Management: A Viable Option for Soil Temperature Reduction and Root Development in Plantation Crop Establishment**
Idowu Babadele Famuwagun*
The Federal University of Technology, Nigeria

P2-427 **Assessment of Soil Degradation Processes with the Help of the Statistic Analysis Method**
Anna Fedotova, Lyudmila Yakovleva and Andrey Sorokin
Astrakhan State University, Russia

P2-428 **Nutrient Removal from Intensive Shrimp Farming Wastewater Using Red Seaweed (Gracilaria Verrucosa)**
Lich Nguyen[1]*, Martin Kumar[2], Nanthi Bolan[1] and Tuan Le[3]
[1] University of South Australia, Australia;[2] Flinders University, Australia;[3] Hue University of Agriculture and Forestry, Viet Nam

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Emmanuel Mutebi
Regional Climate Change Support Initiative (RCCSI), Uganda

P2-430 **Boosting Crop Productivity through Irrigation Water Systems**
William Kayemba
Millennium Environmental Research Alliance(MERA), Uganda

P2-431 **Influences of Environmental Conditions and Agricultural Conservation Practice on Growth and Yield of Cassava with No-Irrigation in Northeast Thailand**
Mallika Srisutham, Masaru Mizoguchi* and Ryoichi Doi
The university of Tokyo, Japan

P2-432 **Increasing Water-Use Efficiency and Crop Value through Surfactant Application in Sprinkler-Irrigated and Rain-Fed Potatoes**
Helena Huiqin Ren[1], Robert Glucksman[2]*, Lisa Hui Fan[1], Stanley J. Kostka[3] and Nicholas J. Gadd[3]
[1] Witgang Agricultural & Landscape Ltd, China;[2] Witgang Agricultural & Landscape Ltd, Hong Kong;[3] Aquatrols Corporation of America, USA

P2-433 **Chemical Co-Precipitation of Iron And Magnesium Oxides on Biochar Produced from Conocarpus Wastes Increases NO3 Removal from Aqueous Solutions**
Mohammad El-Mahrouky, Mohammad Al-Wabel*, Ahmed El-Naggar and Adel R.a. Usman
King Saud University, Saudi Arabia

P2-434 **Practicing Conservation Agriculture and Balanced Fertiliser Use Improves the Yield and Economics of Farmers in Semi-Arid Tropical Region**
Satyanarayana Talatam[1], Ch Srinivasarao[2] and Sumantha Kundu[2]
[1] International Plant Nutrition Institute, India;[2] Central Research Institute for Dryland Agriculture, India

P2-435 **Indicators to Promote Sustainable Agricultural Intensification**
Michelle Wander[1]*, Carmen M. Ugarte[1], Patricia Lazicki[2], Eduardo Mendonca[3] and Hoyoung Kwon[4]
[1] University of Illinois, USA;[2] Ngala University, USA;[3] Federal University of Espirito Santo, USA;[4] IFPRI, USA

P2-436 **Simulating Dry-Season Hardening of Lowland Soils and Assessing the Impacts on Sawah Rice Performance under Three Water Regimes**
Sunday Obalum[1]*, J. Oppong[2], C.A. Igwe[1], M.E. Obi[1] and T. Wakatsuki[3]
[1] University of Nigeria, Nigeria;[2] CSIR-Soil Research Institute, Ghana;[3] Kinki University, Japan

P2-437 **Suppression of Algae Growth by Phosphorus Removal Using Fly Ash as a Growth Medium of Planted Floats**
Sun-Il Lee[1], Sang-Sun Lim[2], Kwang-Seung Lee[2], Woo-Kyun Park[1], Joung-Du Shin[1], Kwang-Sik Yoon[2], Han-Yong Kim[2] and Woo-Jung Choi[2]*
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P2-438 **Characteristics of Isotopic and Elemental Compositions of Potential Water Pollution Sources in Rural Area**
Byeong-Jun Jeon[1], Se-In Lee[1], Sang-Sun Lim[1], Kwang-Seung Lee[1], Hyun-Jin Park[1], Jong-Hyun Ham[1], Kwang-Sik Yoon[1], Sang-Mo Lee[2] and Woo-Jung Choi[1]*
[1] Chonnam National University, Korea;[2] Seoul National University, Korea

P2-439 **Nutrient Sources Affected Concentration and Isotope Ratio of Nitrogen in Ponding Water of Paddy Soils in a Laboratory Incubation Experiment**
Jong-Hyun Ham, Sang-Sun Lim, Kwang-Seung Lee, Byeong-Jun Jeon, Se-In Lee, Hyun-Jin Park, Kwang-Sik Yoon and Woo-Jung Choi*
Chonnam National University, Korea

P2-440 **Zinc Sorption on Coal Mine Drainage Sludge**
Sue A Kang, Youngjae Kim, Seon Yong Lee, Choong Hyun Lee and Young Jae Lee*
Korea University, Korea

P2-441 **Phosphorus Removal and Diesel Degradation by Bacillus Sp. 3434BRRJ Isolated from Industrial Wastewater**
Keun Yook Chung[1]*, Deok-Hyeon Kim[1], Hee Jung Kim[1], Jong In Kim[1], Ju-Hyun Nam[2], Joseph Kwon[2], Jong-Soon Choi[2] and Sun-Hee Woo[1]
[1] Chungbuk National University, Korea;[2] Korea Basic Science Institute, Korea

P2-442 **Effects of Ca2+ and Mg2+ on the Formation of Trihalomethane(thm) and Haloacetic Acid(haa) during Thechlorination of Drinking Water**
Won-Tae Jeong, Da Hee Sin, Deok-Hyeon Kim, Jong In Kim, Moon-Soon Lee, Sun-Hee Woo, Jai-Joung Kim and Keun Yook Chung*
Chungbuk National University, Korea

P2-443 **Effect Of Environmental Factors On The Growth Of And Capacity Of Phosphorus(p) Removal By Bacillus Sp. 3434brrj In The Biological Reactor**
Deok-Hyeon Kim, Da Hee Sin, Jong In Kim, Sun-Hee Woo, Moon-Soon Lee, Jai-Joung Kim and Keun Yook Chung*
Chungbuk National University, Korea

P2-444 **Characterization of the Proteins Involved in the Inhibitory Effect of Copper(cu) on the Growth and Phosphorus(p) Removal Efficiency of Bacillus Sp. 3434BRRJ**
Da Hee Sin[1], Deok-Hyeon Kim[1], Jong In Kim[1], Sun-Hee Woo[1], Ju-Hyun Nam[2], Joseph Kwon[2], Jong-Soon Choi[2] and Keun Yook Chung[1]*
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P2-445 **Effects of Selected Heavy Metals on the Growth of and Phosphorus(p) Removal Capacity by the Three Bacteria, Bacillus Sp. 3434 BRRJ, Pseudomonas Aeruginosa, Bacillus Subtilis**
Da Hee Sin, Deok-Hyeon Kim, Jong In Kim, Moon-Soon Lee, Sun-Hee Woo, Jai-Joung Kim and Keun Yook Jung*
Chungbuk National University, Cheongju, Korea

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P2-446 **Temporal Analysis of Bioremediation of Crude Oil Contaminated Soil Using Remediation by Enhanced Natural Attenuation (rena) Technique in Mbodo Community, Port Harcourt, Nigeria**
Olatunde Eludoyin and Jennifer Oghenetega*
University of Port Harcourt, Nigeria

P2-447 **Heavy Metal Transport and Accumulation in Maize Crop Grown on Battery Wastes Contaminated Site in Response to Compost and Inorganic Fertilizer**
Sifau Adejumo[1]*, Adeniyi Togun[1], Mary Ogundiran[1], Kenta Ikazaki[2] and Takashi Kosaki[2]
[1] University of Ibadan, Nigeria;[2] Tokyo Metropolitan University, Japan

P2-448 **Oil Tea (camellia Oleiferaabel.), an Aluminum Hyperaccumulator, Adapts to Acid Soils Ingeniously**
Rong Fu Chen[1], Qi Long Zeng[2] and Ren Fang Shen[1]*
[1] Chinese Academy of Sciences, China;[2] Jiangsu Province and Chinese Academy of Sciences, China

P2-449 **The Cost Benefit Analysis of Using Contaminated Agricultural Land to Planting Energy Crops**
Ying Shin Chen*
Sinotech Engineering Consultants,Inc, Taiwan

P2-450 **Evaluation of Biological Nitrate Degradation Rate by Indigenous Microorganism in Column Packed With Nitrate-Contaminated Soils Under Various Conditions**
Sunhwa Park*, Hyun-Gu Kim, Min-Kyeong Lee, Gyeong-Mi Lee, So-Hyun Kim, Kyungjin Han, Uijeon Hong, Moon-Su Kim, Young Kim and Tae-Seung Kim
National Institute of Environmental Research, Korea

P2-451 **Phytoremediation of Soil Contaminated with Petroleum Hydrocarbon Using Different Amendments**
Soleiman Modaresi, Mohammad Hajabbasi and Mehran Shirvani
Soil Sciences, Isfahan University of Technology, Iran

P2-452 **Phytostimulation of Maize (zea Mays L.) in an Aged Petroleum Contaminated Calcareous Soil Incorporated with Sewage Sludge**
Mohammad Hajabbasi and Aboozar Asadollahi
Isfahan University of Technology, Iran

P2-453 **Soil Water Management to Decrease the Arsenic Content and Arsenic Speciation of Brown Rice Grown in Arsenic Contaminated Soils**
Tai-Hsiang Huang and Zueng-Sang Chen*
National Taiwan University, Taiwan

P2-454 **Soil Water Management Effect on as Concentration of Brown Rice Grown in Two Different Soil Properties of Arsenic-Contaminated Soils**
Hao-Yen Chang and Zueng-Sang Chen*
National Taiwan University, Taiwan

P2-455 **Reactions of Nonylphenol with Humic Acid in Sediment at Different Ph**
S.W. Chang Chien[1], S.H. Chen[2], Min-Chao Wang[1]*, P.R. Tsai[1] and K. Seshaiah[3]
[1] Chaoyang University of Technology, Taiwan;[2] Chinese Cultural University, Taiwan;[3] Sri Venkateswara University, India

P2-456 **High Background Levels of Cr And Ni in Serpentinitic Soil and their Uptake by Paddy Rice in Taiwan**
Zeng-Yei Hseu[1], Yun-Jie Lai[2]*, Pei-Chia Chuang[2], Hung-Teh Tsai[3], Chun-Ming Chen[3], Jeng-Ren Ho[3] and Chu-Hui Hsieh[3]
[1] National Pingtung University of Science and Technology, Taiwan;[2] Apollo Technology Co, Ltd, Taiwan;[3] Environmental Protection Administration, Taiwan

P2-457 **Lead Immobilization in a Contaminated Soil by Phosphate Enriched Chitosan Beads**
Manoj Shrivastava[1], Prashant Srivastava[2]*, Nanthi Bolan[2] and Ramya Thangarajan[2]
[1] Indian Agricultural Research Institute, India;[2] University of South Australia, Australia

P2-458 **The Impact of Greenhouse Vegetable Farming Duration and Soil Types on Phytoavailability of Heavy Metals and Their Health Risk in Eastern China**
Biao Huang*, Lanqin Yang and Wenyou Hu
Chinese Academy of Sciences, China

P2-459 **Accounting for Changes in the Water Retention Properties of Mine Landform Cover Material over Time**
Ian Hollingsworth*
Horizon Environmental Soil Survey & Evaluation, Australia

P2-460 **The System for Evaluation and Management of Contaminated Agricultural Soils Proposed in the Czech Republic**
Radim Vacha[1], Milan Sanka[2] and Jarmila Cechmankova[1]
[1] Research Institute for Soil and Water Conservation, Czech Republic;[2] Masaryk University Brno, Czech Republic

P2-461 **Safety Evaluation of Vegetables Grown on the Highly Arsenic-Contaminated Soils in Northern Taiwan**
Shaw-Wei Su, Chun-Chih Tsui and Zueng-Sang Chen*
National Taiwan University, Taiwan

P2-462 **Root Uptake of Cs 134 Early After Radioactive Fallout**
Jan Mihalik*
National Radiation Protection Institute, Czech Republic

P2-463 **Horse Paddocks - A Source of Water Pollution Via Excess Phosphorus (p) and Nitrogen (n) Leaching and Possible Counter Measures**
Mohammed Masud Parvage*, Barbro Ulen and Holger Kirchmann
Swedish University of Agricultural Sciences, Sweden

P2-464 **Effect of Inorganic and Organic Amendments on the Bioavailability of Chromium in Contaminated Soils: A Sequential Study**
H.R. Ahmad*, Saifullah, M. Zia ur Rehman, T. Aziz and M. Sabir
University of Agriculture, Pakistan

P2-465 **The Effect of Deltametrin Application on Microbial Degradation of Organic Matter and Soil Fertility**
Adipati Napoleon* and Dwi Probowati Sulistyani
Sriwijaya University, Indonesia

P2-466 **Foliar Application of Zinc at Booting Stage can Modify Plant Growth and Decrease Cd Concentration in Bread Wheat**
Saif Ullah, University of Agriculture , Pakistan

P2-467 **Application of Lherzolite on the Plant Growth and on Chemical Fractionation of Lead in Contaminated Soil**
Md. Abul Kashem[1], Shigenao Kawai[2], Bal Ram Singh[3] and Imamul Huq[4]
[1] Chittagong University, Bangladesh;[2] Iwate University, Japan;[3] Norwegian University of Life Sciences, Norway;
[4] University of Dhaka, Bangladesh

P2-468 **Effect of Rare Metals on Uptake Characteristics and Growth Response of Leafy Vegetables**
Md. Shoffikul Islam[1]*, Daisuke Ueno[2], Takashi Someya[2], Koichi Inoue[2] and Noriko Ryuda[2]
[1] Chittagong University, Bangladesh;[2] Saga University, Japan

P2-469 **The Potential of Legume Trees for Phytostabilization of Mercury Polluted Soils**
Hanna Artuti Ekamawanti[1], Yadi Setiadi[2], Didy Sopandie[2], Dwi Andreas Santosa[2], Rocio Millan[3] and Luis E. Hernandez[4]
[1] Tanjungpura University, Indonesia;[2] Bogor Agricultural University, Indonesia;[3] Medioambientales y Tecnologicas, Spain;[4] Universidad Autonoma de Madrid, Spain

P2-470 **Phytoextraction of Lead Contaminated Soils with Fagopyrum Esculentum: A Field and Laboratory Scale Study**
Armelle Braud[1]*, Pierre Gaudin[1], Alice Hazotte[1], Elodie Leclerc[1], Cecile Leguern[2] and Thierry Lebeau[1]*
[1] IRSTV, France;[2] BRGM Service Geologique Regional des Pays de la Loire 1, France

P2-471 **Rhizo-Phytoextraction of Metal Contaminated Soils: An Innovative Selection Tool for Rhizobacteria**
Armelle Braud*, Pierre Gaudin, Marine Hubert and Thierry Lebeau*
IRSTV, France

P2-472 **Cu Extractability and Uptake By Maize (zea Mays L.) and Ryegrass (lolium Perenne L.) Plants In a Contaminated Soil Amended with Manure, Compost and Compost-Derived Humic Acids**
Mauricio Molina*, Ana Beatriz Torres and Rodrigo Ortega
Universidad Tecnica Federico Santa Maria, Chile

P2-473 **Phytoextraction-Assisted Bioaugmentation of Soils Contaminated by Cu and Cd: Role of the Bacterial Siderophore Pyoverdine**
Jean-Yves Cornu[1]*, Mourad Elhabiri[2], Claire Ferret[3], Valerie Geoffroy[3], Karine Jezequel[4], Yann Leva[4], Marc Lollier[4], Armelle Braud[5], Isabelle Schalk[3] and Thierry Lebeau[5]*
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[2] CNRS-Universite de Strasbourg, France;[3] Universite de Strasbourg-CNRS, ESBS, France;[4] Universite de Haute Alsace, France;[5] Universite de Nantes, France

P2-474 **Use an Aryl Hydrocarbon Receptor (ahr) Reporter Gene Assay with the Improved Cleanup Procedure to Survey Dioxin Levels of Taiwanese Soil**
Ding Yan Lin[1], How Ran Chao[1]*, Zeng Yei Hseu[1] and Wen Yao Liu[2]
[1] National Pingtung University of Science and Technology, Taiwan;[2] National Taiwan University, MWH Americas Inc., Taiwan

P2-475 **The Potentiality of Arabidopsis Halleri Ssp. Gemmifera to Accumulate Cd, Zn and Pb Grown in Nutrient Solution**
Md. Abul Kashem[1], Shigenao Kawai[2] and Bal Ram Singh[3]
[1] Chittagong University and Asian University for Women, Bangladesh;[2] Iwate University, Japan;[3] Norwegian University of Life Sciences, Norway

P2-476 **One-Pot Synthesized Zerovalent Iron/activated Carbon Composite Degrades Trichloroethylene**
Yu-Ling Cheng, Yuh-Fan Su, Yang-Hsin Shih* and Ying-Jie Chang
National Taiwan University, Taiwan

P2-477 **Cadmium Accumulation and Antioxidant Response of Wheat Cultivars to Silicon Application in Hydroponics**
Asif Naeem[1]*, Saif Ullah[2], Muhammad Zia Ur Rehman[2] and Tasneem Akhtar[2]
[1] Nuclear Institute for Agriculture and Biology (NIAB), Pakistan;[2] University of Agriculture, Pakistan

P2-478 **Calcium Application Alleviates Nickel Phytoxicity in Rice (Oryza Sative L.)**
Humera Aziz and Muhammad Sabir
University of Agriculture, Pakistan

P2-479 **Arbuscular Mycorrhizal Fungi in Bioremediation of Co-Contaminated Soil**
Nejla Hechmi[1]*, Nadhira Ben Aissa[2], Hassen Abdenaceur[1] and Naceur Jedidi[1]
[1] Water Researches And Technologies Center (CERTE), Tunisia;[2] National Agronomic Institute of Tunisia, Tunisia

P2-480 **Remediation of Crude Oil Polluted Soils: Effect of Organic and Inorganic Nutrient Source on the Growth of Sweet Potato (ipomea Batata)**
Sunday Aboh* and Harry Isitekhale
Ambrose Alli University, Nigeria

P2-481 **Biosolid-Based Co-Composts With Lime, Bentonite and Biochar Reduce the Bioavailability of Cadmium in Contaminated Soil**
Thammared Chuasavathi[1]*, Nanthi S. Bolan[2], Balaji Seshadri[2], Chuleemas Boonthai Iwai[1] and Duangrat Thongphak[1]
[1] Khon Kaen University, Thailand ;[2] University of South Australia, Thailand

P2-482 **Feasibility Study of Using Earthworm and Agricultural Waste as Bio-Adsorbent for Copper Contamination in Soil**
Ratchanee Wongkogsoong, Chuleemas Boonthai Iwai* and Mongkon Ta-Oun
Khon Kaen University, Thailand

P2-483 **Manage Different Agro-Industrial Wastes by Using Vermicomposting with Chicken Manure**
Nattakit Petmuenwai, Chuleemas Boonthai Iwai*, Mongkon Ta-Oun and Thammared Chuasavathi
Khon Kaen University, Thailand

P2-484 **Potential of Elephant Grass in the Phytoremediation of Zinc and Cadmium Contaminated Soil**
Clarice Oliveira[1]*, Vinicius Nascimento[1], Nelson Moura Amaral Sobrinho[1] and Segundo Urquiaga[2]
[1] Universidade Federal Rural do Rio de Janeiro, Brazil;[2] Embrapa Agrobiologia, Brazil

P2-485 **Organic and Microbial Evaluation of Biodegradation Capacity of Soils to Degrade Petrogenic Hydrocarbons**
Suman George*
The University of Western Australia, Australia

P2-486 **Immobilization of Copper in Brown Soil Using Different Amendments**
Shiwei Zhou[1], Zhihong Yu[2], Fei Lian[2], Zhongqi Liu[2], Hua Zhang[1] and Zhengguo Song[2]*
[1] Chines Academy of Sciences, China;[2] Ministry of Agriculture, China

P2-487 **Phyto-Extraction of Heavy Metals from Municipal Sewage Loaded Soils of Calciorthents**
Narindar Singh Bhogal[1]*, R. Sakal[2] and Dhiraj Singh[1]
[1] Directorate of Rapeseed Mustard Research, India;[2] Rajendra Agricultural University, India

P2-488 **Determination of Chemical Availability of Nickel and Copper in Soil**
Mary Allago*, Paton. G.i. and Hedda. W.i.
University of Aberdeen, United Kingdom

P2-489 **Improvement of Remediated Soils by Applying Different Agricultural Soils**
Dong-Jin Kim[1], Hong-Seok Yang[1], Won-Jae Lee[1], Da-Seul Kang[1], Byung-Koo Ahn[2] and Jin-Ho Lee[1]*
[1] Chonbuk National University, Korea;[2] Jeollabuk-Do Agricultural Research and Extension Services, Korea

P2-490 **Ethylenediamine-Zeolite Hybrid for a New Approach to Phytoremediation**
Kwang Seop Kim[1], Yun-Ju Kang[2], Min-Tae Kim[1], Jin-Hee Ryu[1], Jong-Seo Choi[1], Suk-Jin Kim[1], Choon-Woo Lee[1], Ki Do Park[1], Hang-Woon Kang[1], Owen W. Duckworth[3] and Man Park[4]*
[1] RDA, Korea; [2] Gyeongsangnbukdo Government Public Institute of Health and Environment, Korea; [3] North Carolina State University, USA; [4] Kyungpook National University, Korea

P2-491 **Visible and Near Infrared Spectroscopy of Anthropogenic Soils on a Brown Coal Mining Dumpsite**
Asa Gholizadeh[1]*, Lubos Boruvka[1], Mohammadmehdi Saberioon[2] and Radim Vasat[1]
[1] Czech University of Life Sciences, Czech Republic;[2] University Putra Malaysia, Malaysia

C3.5-4: Physical Restoration of Soils

Soil Art *Featured artist: Daniel McCormick & Mary O'brien, Watershed Sculpture, USA, danielmccormick.blogspot.com*

P2-492 **Heavy Metals Concentrations in Soil and Factors Controlling their Behavior during an Application of Raw and Composted Recycled Paper Mill Sludge**
A. Rosazlin[1], I. Che Fauziah[1], K. Wan Rasidah[2] and A.B. Rosenani[1]
[1] University of Malaya, Malaysia ;[2] Forest Research Institute of Malaysia (FRIM), Malaysia

P2-493 **Soil Assessment at Degrading Mangrove Forests: A Case Study in Lawas, Sarawak**
Wan Rasidah Kadir[1]*, Mohamad Fakhri Ishak[1], Haazizkin Jumat[2] and Suhaimi Wan Chik[1]
[1] Forest Research Institute Malaysia, Malaysia;[2] Sarawak Forestry Department, Malaysia

P2-494 **Role of Arbuscular Mycorrhizal Fungi to the Phytoremediation of Metal Polluted Soils**
Sebastian Meier[1], Nanthi Bolan[2], Fernando Borie[1], Cornejo Pablo[1]* and Naser Khan[2]
[1] Universidad de La Frontera, Chile;[2] University of South Australia, Australia

P2-495 **Chicken Manure and Water Dispersible Clay of Brazilian Soils**
Thadeu Rodrigues De Melo* and Joao Tavares Filho
State University of Londrina, Brazil

P2-496 **Interactions of Food Waste Compost with Metals and Metal-Chelant Complexes during Soil Remediation**
Jingzi Beiyuan, Josie Wu and Dan Tsang*
Hong Kong Polytechnic University, Hong Kong

P2-497 **A New Method for Selective Extraction of Trace Elements Occluded in Mn Oxides from Soils with a Focus on Applicability to Andisols**
Aomi Suda[1]*, Tomoyuki Makino[1] and Teruo Higashi[2]
[1] National Institute for Agro-Environmental Sciences, Japan;[2] University of Tsukuba, Japan

P2-498 **Immobilization of Arsenic and Cadmium by Oil Palm Empty Fruit Bunch Biochar**
Norazlina Abu Sari and Che Fauziah Ishak
Universiti Putra Malaysia, Malaysia

P2-499 **Agroforest System Implantation for Gully Erosion Control in Pindorama Reserve, Brazil**
Maria Teresa Vilela Nogueira Abdo[1]*, Sidney Rosa Vieira[2], Antonio Lucio Mello Martins[3], Everton Luis Finoto[3], Eliane Gomes Fabri[2], Teresa Cristina Tarle Pissarra[4], Fernanda Fernandes Salazar[3], Mariana Barbara Lopes Bonatti[3], Angela Cristina Bieras Fecchi[5], Mauro Ferreira Machado[6] and Maria Conceicao Lopes[3]
[1] Polo Regional Centro Norte, APTA-SAA, Brazil;[2] IAC, APTA, Brazil;[3] Polo Centro Norte, APTA, Brazil;[4] FCAV_UNESP, Brazil;[5] UNIRP-Agronomia, UNIRP, Brazil;[6] IFTM campus Uberaba, Brazil

P2-500 **Effect of Subsurface Drainage Pumping Station System on Soil Salinity and Drainage in the Reclaimed Tidal Flat Land**
Hui-Su Bae*, Sang-Hun Lee, Jong-Gook Kang, Su-Hwan Lee, Yang-Yeol Oh, Seon-A Hwang, Hong-Kyu Kim and Kyeong-Bo Lee
National Institute of Crop Science, RDA, Korea

C4.2-1: Linking forest Management and Soil Processes to Ecosystem Productivity and Functions

Soil Art *Featured artist: Ken Van Rees, University of Saskatchewan, Dept. of Agroforestry and Afforestation, www.kenvanrees.com*

P2-501 **Change in Soil Organic Matter Composition and C Transfered Pathways after Afforestation of Farmland in Northeastern China**
Weiwei Cong[1], Tusheng Ren[2] and Baoguo Li[2]*
[1] Shenyang Agricultural University, China;[2] China Agricultural University, China

P2-502 **Study of Purine Alkaloids and Phenolic Substances if Cocoa Beans Grown in Different Soils in Southeastern Bahia, Brazil**
Quintino Araujo[1]*, Guilherme Loureiro[2], Jose O Souza Jr[2] and Jose C Faria[2]
[1] Cocoa Research Center / Ceplac and State University of Santa Cruz, Brazil;[2] State University of Santa Cruz, Brazil

P2-503 **Nutrient Cycling in Japanese Agro-Ecosystem in 1980 And 2010**
Shinichiro Mishima[1], Kimura Sonoko Drothea[2], Sadao Eguchi[1], Yasuhito Shirato[1] and Kazuyo Matsubae[3]
[1] National Institute for Agro-Environmental Sciences, Japan;[2] Tokyo University of Agriculture and Technology, Japan;[3] Tohoku University, Japan

P2-504 **Belowground Carbon and Nitrogen Status in a Fire-Damaged Urban Forest Landscape**
Jaeyeob Jeong[1]*, Choonsig Kim[2]*, Hui-Yeong Seo[2], Jae-Hyun Park[2] and Ho-Seop Ma[2]
[1] University of South Australia, Australia;[2] Gyeongsang National University, Korea

P2-505 **Carbon and Nitrogen Status of Organic Horizon by an Age Sequence of Pinus Radiata Plantations in South Australia**
Jaeyeob Jeong[1]*, Don Mcguire[2], Nanthi S. Bolan[1], Ravi Naidu[1], Richard Harper[3] and Choonsig Kim[4]*
[1] University of South Australia, Australia;[2] Forestry SA, Australia;[3] Murdoch University, Australia;[4] Gyeongnam National University of Science and Technology, Korea

P2-506 **Annual Variation of Soil Respiration Rates Following Fertilizer Applications in Red Pine Stands**
Jaeyeob Jeong[1]*, Choonsig Kim[2]*, Nanthi S. Bolan[1] and Ravi Naidu[1]
[1] University of South Australia, Mawson Lakes Campus, Australia;[2] Gyeongnam National University of Science and Technology, Korea

P2-507 **Evaluation of Alluvial and Upland Soils of Obubra Local Government Area of Cross River State, Nigeria for Okra (Abelmoschus Esculentus) Production**
Emmanuel Attoe, U. L. Undie and M.a Kekong
Cross River University of Technology, Nigeria

P2-508 **How Does Litter Cover, Litter Diversity and Fauna Affect Sediment Discharge and Runoff?**
Philipp Goebes*, Steffen Seitz*, Peter Kuhn and Thomas Scholten
Eberhard Karls University of Tubingen, Germany

P2-509 **Paw-Paw Leaf Biopesticide and Pennisetum-Grass-enhanced Soil Properties and Moringa Oleifera Growth**
Caroline Mba*
University of Nigeria, Nigeria

P2-579 **Pontoscolex Corethrurus Earthworm Boostent Soil Biological And Physicochemical Properties And Induced Edible Mushroom Production**
Caroline Mba*
University of Nigeria, Nigeria

P2-510 **Soil Carbon Cycle in Subtropical Afforestation in Taiwan**
Po-Neng Chiang*, Jui-Chu Yu, Ya-Nan Wang and Yen-Jen Lai
National Taiwan University, Taiwan

P2-511 **Year-Round Vegetable Production For Food Security And Livelihood Support In The Humid Tropics In The Wake of a Changing Climate And Extreme Weather**
Olabimpe Oladitan[1]* and Samuel Agele[2]
[1] Federal University of Technology, Nigeria;[2] Rufus Giwa Polythecnic.Owo. Nigeria

P2-512 **Agriculture and Soil Conservation**
Fouad Issoufa Ali*
Comores ANACM, Comoros

P2-513 **Pine and Oak Trees Had Contrasting Water Use Responses to Environmental Changes Caused by Industrialization in Southern Korea: Evidence from Tree Ring δ13c**
Kwang-Seung Lee[1], Jin-Hyeob Kwak[2], Hung Dinh Viet[3], Sang-Sun Lim[1], Miwa Matsushima[4], Scott X. Chang[2] and Woo-Jung Choi[1]*
[1] Chonnam National University, Korea;[2] University of Alberta, Canada;[3] Institute for Agricultural Environment, Viet Nam;[4] Chiba Universtiy, Japan

C4.5-1: The Soil Underfoot: Infinite Possibilities for a Finite Resource

Soil Art *Featured artist: Anneli Ketterer, Germany, www.decrustate.net*

P2-514 **Physical and Chemical Characteristics of Rendolls in the Tigak Area of New Ireland Province, Papua New Guinea**
Passinghan Igua
Tigak Sustainable Development Foundation, Papua New Guines

P2-515 **Climate Change Induced Effects on Water Balance, Productivity, Biodiversity and Ecosystem Functions of Arable Soils in Austria**
Andreas Baumgarten[1]*, Helene Berthold[2], Gert Bachmann[2], Franz Hadacek[2], Alexander Bruckner[3], Janet Wissuwa[3], Johann G. Zaller[3], Erwin Murer[4], Johannes Hoesch[1], Barbara Kitzler[5], Kerstin Michel[5] and Sophie Zechmeister-Boltenstern[3]
[1] Austrian Agency for Health and Food Safety, Austria;[2] University of Vienna, Austria;[3] University of Natural Resources and Life Sciences, Austria;[4] Federal Agency for Water Management, Austria;[5] Natural Hazards and Landscape, Austria

P2-516 **Characteristics of Rammed Earth Fence of Samurai Residence in Kanazawa City, Japan**
Masanori Okazaki[1]*, Koyo Yonebayashi[1], Naoya Katsumi[1], Tomoe Nishi[1], Yuichiro Nakatani[2] and Ikuyo Tamaru[2]
[1] Ishikawa Prefectural University, Japan;[2] History and Culture of Kanazawa City, Japan

P2-517 **Exploiting Soil Sample Archives - Effects Of Long-Term Storage on the Solubility of Micronutrients**
Riikka Keskinen[1]*, Mercy Nyambura[2], Keith Shepherd[2] and Martti Esala[1]
[1] MTT Agrifood Research Finland, Finland;[2] World Agroforestry Centre (ICRAF), Kenya

P2-518 **Total and Soluble Concentrations of Micronutrients in the Top- and Subsoils of Sub-Saharan Africa**
Riikka Keskinen[1]*, Mercy Nyambura[2], Keith Shepherd[2] and Martti Esala[1]
[1] MTT Agrifood Research Finland, Finland;[2] World Agroforestry Centre (ICRAF), Kenya

P2-519 **Nanogypsum -A Promising Alternative to Remediate Sodic Soils**
Santhosh Kumar Manoharan[1], Thiyageshwari Subramanium[2]*, Subramanium Kizhaeral S[1] and Chandra Sekaran Natesan[1]
[1] Tamil Nadu Agricultural University, India;[2] Agricultural College and Research Institute, India

P2-520 **The Effect of Climate Change Adaptation on Rural Community Livelihoods**
Skyler Jayden Dembe
Global Initiative Uganda, Uganda

P2-521 **Methodology for Classifying Post-Mining Soil for Tree Planting**
Wan Rasidah Kadir*, Suhaimi Wan Chik, Mohamad Fakhri Ishak and Rozita Ahmad
Forest Research Institute Malaysia, Malaysia

P2-522 **Some Features Of Climate Change In Arid Regions Of Georgia And Its Impact On Soil Erosion And Degradation Processes**
Teimuraz Davitashvili
Tbilisi State University, Georgia

WG4: New Approaches in Paddy Soil Management for Food Safety and Environmental Quality

P2-523 **Subcellular Distribution of Cadmium in the Seedlings of Two Varieties of Hydroponically Grown Paddy Rice**
Hung-Yu Lai* and Bo-Ching Chen
MingDao University, Taiwan

P2-524 **Lead Uptakes by Rice Plant Related to Soil Pb Availability and Rice Genotypes as Confounded with Iron Plaque Formation**

Fang-Lin Li, Ya-Ting Chang, Ching-Ming Yang and Kai-Wei Juang*
National Chiayi University, Taiwan

P2-525 **Characteristics of Cracks in two Paddy Soils and their Impacts on Preferential Flow**
Xinhua Peng* and Zhongbin Zhang
Institute of Soil Science, CAS, China

P2-526 **Paddy Soil Nitrogen Mineralization: Links with Physicochemical Soil Organic Matter Fractions and Enzyme Activities**
Mohammed Abdul Kader[1]*, Steven Sleutel[2], Sabina Yeasmin[1] and Stefaan De Neve[2]
[1] Bangladesh Agricultural University, Bangladesh;[2] Ghent University, Belgium

P2-527 **Isolation and Identification of Ferric Reducing Bacteria and Evaluation of their Roles in Iron Availability in Two Calcareous Soils**
Nasrin Ghorbanzadeh*, Amir Lakzian, Gholam Hosain Haghnia and Ali Reza Karimi
Soil Biology, Iran

P2-528 **Combined Effects of the Continual Application of Composted Rice Straw and Chemical Fertilizer on Rice Yield under a Double Rice Cropping System in the Mekong Delta, Vietnam**
Takeshi Watanabe[1], Man Luu Hong[2], Osamu Ito[3] and Kazuyuki Inubushi[4]
[1] Japan International Research Center for Agricultural Sciences, Japan;[2] CuuLong Delta Rice Research Institute, Viet Nam;[3] UN University, Japan;[4] Chiba University, Japan

P2-529 **Uptake of Heavy Metals by Paddy Rice on Serpentine Soils**
Ya-Ting Ko and Zeng-Yei Hseu*
National Pingtung University of Science and Technology, Taiwan

P2-530 **Effects of Consecutive Turnover of Milk Vetch on Paddy Soil Microbial Properties**
Xinjian Lin*
Fujian Academy of Agricultural Sciences, China

P2-531 **Grading Plant Available Non-Exchangeable Potassium According to its Release Rate Levels Using Sodium Tetraphenylboron**
Ting Li, Huoyan Wang*, Haixia Sun and Jianmin Zhou
Chinese Academy of Sciences, China

P2-532 **Effect of Lactate and Anthraquinone-2,6-Disulfonate on Pentachlorophenol Degradation and Bacterial Community Composition in Paddy Soil**
Manjia Chen, Pengcheng Chen and Fangbai Li*
Guangdong Institute of Eco-environment and Soil Science, China

P2-533 **Estimation of Microbial Biomass Potassium in Paddy Field Soil**
Kohei Yamashita[1], Hiroki Honjo[2], Mizuhiko Nishida[3], Makoto Kimura[4] and Susumu Asakawa[1]*
[1] Nagoya University, Japan;[2] Aichi-Prefecture College of Agriculture, Japan;[3] NARO Tohoku Agricultural Research Center, Japan;[4] Food and Agricultural Materials Inspection Center, Japan

P2-534 **Effect of Irrigation Water Management on As and Cd in Rice Grain**
Rufus Chaney[1]*, Merle Anders[2] and Anna Mcclung[3]
[1] USDA-ARS-EMBUL, USA;[2] University of Arkansas, USA;
[3] US Dept. Agric. Agricultural Research Service, USA

P2-535 **Comparison of Phosphorus Species in a Chinese Paddy Soil Profile After Long-Term Continuous Pig Manure and Superphosphate Fertilization: Analysis by Quantitative 31p- Nuclear Magnetic Resonance**
Xinqiang Liang[1]*, Yi Jin[1], Miaomiao He[2], Yu Liu[1], Yue Zhao[1], Chaodong Fu[1] and Guangming Tian[1]
[1] Zhejiang University, China;[2] Hangzhou Normal University, China

P2-536 **The Evaluation of Copper and Zinc Uptake and Risk Assessment of Twelve Rice Varieties Grown in Cu- or Zn-Contaminated Soils of Taiwan**
Horng-Yu Guo[1]*, C.f. Chiang[1], C. L. Chu[1], T. S. Liu[1], Jeng-Ren Ho[2], P.y. Wu[2], Y. J. Lai[3] and Zueng-Sang Chen[4]
[1] Taiwan Agricultural Research Institute, Council of Agriculture, Taiwan;[2] Environmental Protection Administration of Taiwan, Taiwan;[3] Apollo Technology Co. Ltd, Taiwan;
[4] National Taiwan University, Taiwan

P2-537 **Comparison and Distribution of Phosphorus Fractions in Surface Horizons of Two Paddy Soil Chronosequences**
Ping Zou[1], Jianrong Fu[1]*, Zhihong Cao[2], Jing Ye[1] and Qiaogang Yu[1]
[1] Zhejiang Academy of Agricultural Sciences, China;[2] Chinese Academy of Sciences, China

P2-538 **Using Thermal Analysis to Investigate Physical Protection from Soil Aggregates under the Long-Term Fertilization Practices**
Xiao Fen Liu[1], Chun Zeng Liu[1] and Tu Sheng Ren[2]*
[1] Henan Academy of Agricultural Sciences, China;[2] China Agricultural University, China

P2-539 **Nitrogen Use Efficiency of Promising Rice Genotypes in Drought Prone Northwest Bangladesh**
B Karmakar[1]*, S M Haefele[2], M A R Sarkar[3], A Islam[1] and M A Saleque[1]
[1] Bangladesh Rice Research Institute (BRRI), Bangladesh;
[2] University of Adelaide, Australia;[3] Bangladesh Agricultural University, Bangladesh

P2-540 **Dynamics of Soil Pore-Water Fe2+ and Mn2+ Concentrations in Rice-Faba Bean Crop Rotations**
Km Shamsul Haque*, Philip Eberbach, Leslie Weston, Julia Howitt and Mike Dyall-Smith
Charles Sturt University, Australia

P2-541 **Effect of Cadmium on Microorganism Urease Activity in Paddy Soil**
Xing Hu*, Ying Jiang, Liting Du, Ting Qing and Xuefeng Hu
Shanghai University, China

P2-542 **Micronutrients Dynamics in Soil And Grain Under Long Term Application of Fertilizer and Manure in a Tropical Rice-Rice System**
Mohammad Shahid*, Ak Nayak, P Bhattacharyya, R Tripathi, S Mohanty, A Kumar, B Lal, Priyanka Gautam, R Raja and Bb Panda
Central Rice Research Institute, India

P2-543 **The Factors and Processes Relating with the Accumulation of Zn in Rice Grains**
Guo Wang*, Lijun Sun, Yanhui Chen and Mingkuang Wang
Fujian Agriculture and Forestry University, China

P2-544 **Status of Silicon and Cadmium in Paddy Soils of South India and their Effect on Growth, Yield and Uptake by Rice**
Tapasya Babu[1] and Prakash Nagabovanalli B[2]
[1] Louisiana State University, USA;[2] University of Agricultural Sciences(GKVK), India

P2-545 **Change of Antioxidant Compounds and Antioxidant Activity of Adzuki Bean by Drainage Methods in Poorly Drained Sloping Paddy Field**
Koan Sik Woo, Ki Yuol Jung, Jee Yeon Ko and Jae Saeng Lee
Rural Development Administration, Korea

P2-546 **Antioxidant Compounds and Antioxidant Activity of Proso Millet with Drainage Methods in Poorly Drained Sloping Paddy Field**
Koan Sik Woo, Ki Yuol Jung, Jae Saeng Lee and Jee Yeon Ko
Rural Development Administration, Korea

WG6: Urban Soils-Properties, Functions and Evolution

Soil Art *Featured artist: Ellie Irons, City College of New York (CUNY) Art Department, USA, The Urban Soil Appreciation Initiative, ellieirons.com/soil*

P2-547 **Characterization and Soil Pollution Assessment of Peri-Urban Fadama in South Western Nigeria for Food Security**
Olufunmilayo Ande[1]*, Adetunji A. M[2], Akinpelu M. E[2] and Senjobi B.A[3]
[1] Obafemi Awolowo University, Moore Plantation, Ibadan, Nigeria;[2] Federal College of Agriculture, Nigeria;[3] Federal University of Agriculture, Nigeria

P2-548 **Soil Characterization and Pollution Assessment of Peri-Urban Fadama in South Western Nigeria for Food Security**
Olufunmilayo Ande[1]*, Bola Senjobi[2], Modupe Akinpelu[3] and M Adetunji[3]
[1] Institute Of Agric. Research And Training, OAU, Nigeria; [2] Federal University of Agriculture, Abeokuta, Nigeria; [3] Federal College of Agriculture, Nigeria

P2-549 **Effect of Wastewater Irrigation on Quality of Urban Agricultural Soils in Metropolitan Kano, Nigeria**
Mansur Dawaki*, Abubakar Dikk, Samaila Noma and Umar Aliyu
Usmanu Danfodiyo University, Nigeria

P2-550 **Industrially-Contaminated Land: Soil Quality and Environmental Significance**
Ini Edem[1]* and Oliver A. Opara-Nadi[2]
[1] University of Uyo, Nigeria;[2] Abia State University, Nigeria

P2-551 **The Capabilities of Mycological Display in Determining the Potential Level of Pollution Landscape of Heavy Metal**
Klimova Viktoria
Moscow Pedagogical State University, Russia

P2-552 **Heavy Metal Contamination Characteristics of Greenbelt Soil and Tree Enrichment in Harbin City, China**
Wenbiao Duan, Lixin Chen* and Chao Zhang
Northeast Forestry University, China

P2-553 **Sources of Heavy Metal Pollution Risk in Agricultural Soils of a Rapidly Industrialized Area in Yangtze Delta Region of China**
Xianghua Xu* and Yudong Wang
Nanjing University of Information Science &Technology, China

P2-554 **Soil Usage in the Construction of Local Building in Old Kuntunkun Communities in Gwagalada Area Council of the Federal Capital Territory, Abuja Nigeria**
Michael Adedotun*
Michael Adedotun Oke Foundation, Nigeria

P2-555 **The Ways of Chernozem's Transformation in the Conditions of Urbopedogenesis in South Russia**
Sergey Gorbov* and Olga Bezuglova
The Sothern Federal University, Russia

P2-556 **Effectiveness of Chelator Washing of Acid-Contaminated Soils and Potential Risk of Edta Leaching to Groundwater**
Qi-Tang Wu*, Xiaofang Guo, Zebin Wei and Xinxian Long
South China Agricultural University, China

P2-557 **Principles of Creating a Soil Map of Urban Areas (by The Example of St. Petersburg)**
Elena Sukhacheva and Boris Aparin*
The Dokuchaev Central Soil Science Museum, Russia

P2-558 **Decomposition in Soil - Evaluation of Cemetery Soils**
Iris Zimmermann, Heiner Fleige* and Rainer Horn*
Christian-Albrechts-University, Germany

P2-559 **Pedogenesis on a Former Settling Pond of Iron Industry**
Hermine Huot[1]*, Marie-Odile Simonnot[1] and Jean Louis Morel[2]
[1] Laboratoire Reactions et Genie des Procedes, France;[2] Laboratoire Sols et Environnement, France

P2-560 **Treatment of Acidic Mine Soils: Effects on Heavy Metal Dynamics and Growth of Corymbia Citriodora Var.variegata Seedlings**
Yong Liu[1], Yingqun Ma[1] and Chuxia Lin[2]*
[1] South China Agricultural University, China;[2] University of Salford, United Kingdom

P2-561 **Evaluation of Hydraulic Properties of Urban Technosoils Built with Recycled Waste**
Deniz Yilmaz*, Pierre-Emmanuel Peyneau and Michel Legret
GERS, IFSTTAR, France

P2-562 **Organic and Synthetic Soil Amendments Influence Soil Quality and Growth of Tropical Urban Trees**
Subhadip Ghosh[1]*, Daniel Burcham[1] and Amitava Rakshit[2]
[1] National Parks Board, Singapore;[2] Banaras Hindu University, India

P2-563 **Distribution of Organic Carbon on the Roadside Soils of a Tropical Urban City**
Subhadip Ghosh[1]*, Muhammad Hafiz Magnus[1], Lokman Yusof[1], S Shenbagavalli[2] and S Mahimairaja[2]
[1] National Parks Board, Singapore;[2] Tamil Nadu Agricultural University, India

P2-564 **Use Of Metal Contaminated And Edta Washed Garden Soil In Field Experiment**
Domen Lestan[1]*, Masa Jelusic[1], Erika Jez[1] and Neza Finzgar[2]
[1] University of Ljubljana, Slovenia;[2] Envit Ltd., Slovenia

P2-565 **Contribution of Bricks to Urban Soil Properties**
Thomas Nehls[1]*, Sarah Rokia[2], Christophe Schwartz[2], Beate Mekiffer[1] and Gerd Wessolek[1]
[1] Technische Universitaet Berlin, Germany;[2] Universite de Lorraine, France

P2-566 **Heavy Metal Investigations in the Urban Soils of a Hungarian City**
Adrienn Horvath* and Andras Bidlo
University of West Hungary, Hungary

P2-567 **Influence of Asphalt Pavement on Major Element Forms in Subgrade Soils**
Kimihiro Kida* and Masayuki Kawahigashi
Tokyo Metropolitan University, Japan

P2-568 **Effect of Population Density on Heavy Metal Concentration in Urban Areas: Differences Between Urban Soil and Street Dust**
Jose A. Acosta*, Angel Faz, Silvia Martinez-Martinez, Raul Zornoza and Maria Gabarron
Universidad Politecnica de Cartagena, Spain

P2-569 **Speciation of Metals over Different Chemical Fraction in Street Dust from Different Uses as Basis for Risk Assessment**
Jose A. Acosta[1]*, Angel Faz[1], Karsten Kalbitz[2], Boris Jansen[2] and Silvia Martinez-Martinez[1]
[1] Universidad Politecnica de Cartagena, Spain;[2] University of Amsterdam, Netherlands

P2-570 **Soil Capping for Vegetative Establishment in Red Mud Disposal Areas**
Chunhua Si[1], Yingqun Ma[2] and Chuxia Lin[3]*
[1] South China Agricultural university, China;[2] Chinese Research Academy of Environmental Sciences, China;
[3] University of Salford, United Kingdom

P2-571 **Heavy Metal Retention of Different Roadside Soils**
Bjorn Kluge*, Moritz Werkenthin and Gerd Wessolek
TU Berlin, Germany

P2-572 **Modern Soils on Bronze Age Settlement in Ural Region (russia): Genesis, Properties and Evolution**
Alexandra Golyeva[1], Olga Khokhlova[2], Nickolay Sherbakov[3] and Iia Shuteleva[3]
[1] Institute of Geography RAS, Russia;[2] Institute of Physicochemical and Biological Problems in Soil Science, Russia;[3] Bashkir State Pedagogical University named After M.Akmulla, Russia

P2-573 **Diagnosis of Heavy Metal Pollution in Urban Soils: The Case of Mexico City**
Francisco Bautista[1], Carmen Delgado[1], Ruben Cejudo[1], Patricia Quintana[2], Silvia Ramos[3], Avto Goguichaishvili[1], Bertha Aguilar[1] and Juan Morales[1]
[1] Universidad Nacional Autonoma de Mexico, Mexico;
[2] Unidad Merida, Mexico;[3] Universidad de Ciencias y Artes de Chiapas, Mexico

P2-574 **Magnetic Properties of Dusts and Urban Topsoils from the Mexicali (Mexico) - Calexico (U.S.) Binational Conurbation**
Alexander Sanchez-Duque[1]*, Francisco Bautista[2], Jaime Alonso Reyes[2], Fernando Amilcar Solis[2], Ruben Cejudo[1], Bertha Aguilar[1], Juan Morales[1] and Avto Gogichaishvili[1]
[1] Universidad Nacional Autonoma de Mexico, Mexico;
[2] Universidad Autonoma de Baja California, Mexico

P2-575 **Magnetic Susceptibility and Saturation Isothermal Remanent Magnetization and their Relationship with Heavy Metals in Urban Soils in Mexico City**
Ruben Cejudo[1], Francisco Bautista[1]*, Bertha Aguilar[1], Thomas Ihl[1], Carmen Delgado[1], Juan Morales[1], Patricia Quintana[2] and Avto Gogichaishvili[1]
[1] Universidad Nacional Autonoma de Mexico, Mexico;
[2] CINVESTAV Unidad Merida, Mexico

P2-576 **A Comparison of the Efficiency of Sediment Control Devices on Stockpiled Material at North Turramurra Recreational Area**
Pamela Hazelton, University of Technology, Australia

P2-577 **Metal Trace Elements in Fruits and Vegetables in France**
Christiane Raynal-Lacroix
Centre Technique Interprofessionnel des Fruits et Legumes, France

P2-578 **Biochemical and Chemical Indicators of Anthropogenic Transformations for Soils in Urbanised Areas**
Elzbieta Bielinska* and Barbara Futa
University of Life Sciences in Lublin, Poland

P2-580 **The Detection of Temporal Variation of Land Cover Types Using Landsat Data Fusion**
Jong Chul Jeong[1], Giha Lee[2]
[1]Namseoul University, Korea;[2]Kyungpook National University, Korea

Poster Session 3 (P3)

June 12 (THU)

IDS8: Soils, Land Use and Heat

P3-1 **Impact of 2030 Climate on Suitability of Tuber Crops Cultivation in India**
Byju G and Sabitha Soman, Central Tuber Crops Research Institute, India

P3-2 **Soil Phosphorus Retention Capacity of Different Amendments**
Zahoor Ahmad
University of Haripur, Pakistan

P3-3 **Accumulation and Leaching Potential of Soluble Nitrogen in Greenhouse Soil**
Caiyan Lu[1]*, Xin Chen[1], Yi Shi[1] and Mingfen Niu[2]
[1] Chinese Academy of Sciences, China; [2] Shenyang Jianzhu University, China

P3-4 **Nutrient Stocks and C Sequestration in Forest and Forest-Derived Land Use Systems in the Rainforest Zone of Nigeria**
Oliver A. Opara-Nadi[1]*, Juliana N. Uche[1], Ini D. Edem[2], Friedrich O. Beese[3] and Hubert Schulte-Bisping[3]
[1]Abia State University, Nigeria; [2]University of Uyo, Nigeria ; [3]University of Goettingen, Germany

P3-5 **Comparison of the Temperature Regime Measured inside a Containerized Lysimeter Station, Inside Lysimeter Vessels and in Surrounding Soil**
Holger Rupp[1], Ralph Meissner[1] and Sabine Bernsdorf[2]
[1] Helmholtz Centre for Environmental Research, Germany;
[2] Martin-Luther-University Halle-Wittenberg, Germany

P3-6 **Changes in Microbial P and Related Soil Properties as Affected by Low Molecular Weight Organic Acids (lmwoas) in a Neutral Soil of China**
Yongzhuang Wang, Yi Shi*, Xin Chen, Caiyan Lu, Yajie Zhao and Zhi Quan
University of Chinese Academy of Sciences, China

P3-7 **Effect of Cadmium on Biomass and Qualities of Different Chinese**
Shuai Liu, Yi Shi*, Mingda Liu and Xin Chen
Chinese Academy of Sciences, China

P3-8 **Qualitative Land Suitability Evaluation for Principal Crops of Southern Iran**
Abolfazl Azadi*, Majid Baghernejad and Sirous Shakeri
Shiraz University, Iran

P3-9 **Access to Lysimeter Measurements with Affordable, Ready-To-Use Lysimeter Technology**
Katja Richter[1]*, Sascha Reth[1], Manfred Seyfarth[1] and Michael A. Forster[2]
[1] Umwelt-Gerate-Technik GmbH, Germany; [2] ICT International, Australia

P3-10 **Land Use Type as a Factor for Carbon Accumulation in Urban Soils from Elements of Green Infrastructure**
Miglena Zhiyanski* and Vania Doichinova
Bulgarian Academy of Sciences, Bulgaria

P3-11 **Restoration of Chernozems Fertility under the Influence of Green and Organic Fertilizers**
Tamara Leah*
Ministry of Agriculture, Institute of Soil Science, Agrochemistry and Soil Protection, Moldova

P3-12 **Land Use Change Effect on Carbon Stocks in Mountain Ecosystems from Rhodope Mountain, Bulgaria**
Miglena Zhiyanski[1]*, Angel Ferezliev[1] and Jens Leifeld[2]
[1] Bulgarian Academy of Sciences, Bulgaria ;[2]Agroscope Reckenholz-Tanikon ART, Switzerland

P3-13 **Quantifying Small-Scale Variability in Water Storage and Root Water Uptake on the Edwards Plateau, Texas**
Ieyasu Tokumoto*
Saga University, Japan

P3-14 **Effect of Land Use Change on Soil Physical Properties of Disadvantageous Cultivated Areas**
Mizuki Momose, Masahiro Nakajima and Hirotaka Saito*
Tokyo University of Agriculture and Technology, Japan

P3-15 **Temperature and Water Flow in an Agricultural Area under Different Land Uses**
Adilson Pinheiro[1]*, Vander Kaufmann[1], Ralph Meissner[2] and Heinz Borg[3]
[1] Fundacao Universidade Regional de Blumenau, Brazil; [2] Helmholtz Zentrun fur Unweltforschung, Germany; [3] Martin Luther Universitat Halle Wittenberg, Germany

P3-16 **The Design and Development of the Sustainable Land Management System in Ceylanpınar State Farm**
Hakki Emrah Erdogan[1]* and Mahmut Yuksel[2]
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[1] Northwest A&F University, China; [2] Chinese Academy of Sciences, China

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[1] Universidade de Lisboa, Unidade de Investigacao de Quimica Ambiental, Portugal; [2] Universidad de Santiago de Compostela, Spain

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[1] Korea Institute of Science and Technology (KIST), Korea; [2] Mine Reclamation Corporation (MIRECO), Korea

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[1] Korea University, Korea; [2] Korea Forest Research Institute, Korea; [3] Mine Reclamation Corporation, Korea

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[1] Sejong University, Korea; [2] Mine Reclamation Corporation(Governmental Agency of Korea), Korea

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[1] Chonnam National University, Korea; [2] Gwangju Istitute of Science and Technology, Korea; [3] Mine Reclamation Corporation, Korea

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[1] Kangwon National University, Korea; [2] Chungnam National University, Korea; [3] Korea Mine Reclamation Corporation(MIRECO), Korea; [4] Dongguk University, Korea

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[1] Kangwon National University, Korea; [2] Korea Mine Reclamation Corporation(MIRECO), Korea; [3] Dongguk University, Korea

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[1] Chungnam National University, Korea; [2] Kangwon National University, Korea; [3] Korea Mine Reclamation Corporation (MIRECO), Korea

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Yazd University, Iran

P3-110 **Pedogenesis and Stage Weathering Vertic Haplusteps Derived from Alluvialbasaldeposits**
Ulfiyah A. Rajamuddin[1]* and Christianto Lopulisa[2]
[1] Tadulako University, Indonesia; [2] Hasanuddin University, Indonesia

DS5: Soil Health: Key to Food Security

Soil Art *Featured Artist: Nance Klehm, Social Ecologies, USA, spontaneousvegetation.net*

P3-111 **Soil Microbial Biomass and Mineralzable C and N Associated with Water-Stable Aggregates after Conversion of a Native Forest into Cultivation at Munessa, Ethiopia**
Yeshanew Ashagrie Abitew[1]* and Wolfgang Zech[2]
[1] ORDA, Ethiopia; [2] Bayreuth University, Germany

P3-112 **The New World Atlas of Desertification: Soil is Slipping Away.....We Can Stop it!**
Pandi Zdruli[1], Rattan Lal[2], Artemio Cerda[3], Jorge Batlle-Sales[4], Wolfgang Burghardt[5] and Michael Cherlet[6]
[1] Mediterranean Agronomic Institute of Bari, Italy; [2] Ohio State University, USA; [3] Universidad de Valencia, Spain; [4] Universidad de Valencia, Spain; [5] University Duisburg Essen, Germany; [6] Joint Research Centre, Italy

P3-113 **Socio-Cultural Aspect of Soil Management for Resource and Environment Conservation: 'Zabo' An Unique Indigenous System of Soil Management**
U. C. Sharma[1]* and Vikas Sharma[2]
[1] Centre for Natural Resources Management, India; [2] SK University of Agricultural Sciences & Technology, Jammu, India

P3-114 **Increasing Productivity through Promoting Balanced Fertilizer Use in Bangladesh**
Mohammad Altaf Hossain*
Soil Resource Development Institute (SRDI), Bangladesh

P3-115 **Impact of Selected Industries on Soil and Groundwater in Abia State, Nigeria**
Olayinka Nwachukwu* and Mabel Onwuka
Michael Okpara University of Agriculture, Nigeria

P3-116 **Influence of Conservation Agriculture Practice Systems (caps) to Soil Properties in a Sloping Oxisol in Southern Philippines**
Apolinario Jr Gonzaga[1]*, Pompe C Sta Cruz[2], Agustin R Mercado Jr[3] and Nelda Ruba Gonzaga[1]
[1] Misamis Oriental State College of Agriculture and Technology, Philippines; [2] University of the Philippines Los Banos; [3] World Agroforestry Center, Philippines

P3-117 **Sustaining Soil Health to Produce Quality Food**
Nanthi Bolan[1]* and Ravi Naidu[2]
[1] University of South Australia, Australia; [2] University of South Australia, CRC Care, Australia

P3-118 **Changes in Soil Physical Health of an Eroded Land as Affected by Vegetative Buffer Strips and Vegetal Mulch Cover**
Kayode S. Are[1]*, Suarau O. Oshunsanya[2], Ayodele O. Adelana[1] and Gabriel A. Oluwatosin[1]
[1] Institute of Agricultural Research and Training, Nigeria; [2] University of Ibadan, Nigeria

P3-119 **Effect of Variation in Nitrogen And Potassium Ratio (n:k) in Soil on the Yield, Yield Components and Shelf Life of White Yam (discorea Rotundata P.)**
Osadebamwen Osemwota*, Harry Isitekhale and Godwin Imona
Ambrose Alli University, Nigeria

P3-120 **A Qualitative Comparison of a Sandy Podzol under High-Input Kikuyu-Based Pasture and Native Fynbos Vegetation**
Pieter Swanepoel[1]*, Chris Du Preez[2], Philip Botha[1] and Hennie Snyman[2]
[1] Western Cape Department of Agriculture, South Africa; [2] University of the Free State, South Africa

P3-121 **Proximate Mineral Composition of Purslane (portulca Oleracea L.) in Response to Salinity**
Md Kamal Uddin and Abdul Shukur Juraimi
University Putra Malaysia, Malaysia

P3-122 **Flush of Co2 as a Biologically Based Tool to Predict Nitrogen Mineralization from Soil**
Alan Franzluebbers* and Richard Haney
USDA-Agricultural Research Service, USA

P3-123 **Soil Management Strategy for Enhancing Soil Quality for Higher and Better Crop Yields**
Mohammad H Golabi
College of Natural and Applied Sciences,University of Guam, USA

P3-124 **Comparison of Soil Nutrient Recovery after Seven-Year Fallow in Ultisol Grown to Cassava-Pigeon Pea Based Systems for Seven Years in Southeastern Nigeria**
Charles Asadu*
Unversity of Nigeria, Nigeria

P3-125 **Development the Quality of Organic Fertilizers from Chicken Manure by Using Biochar**
Pancheewan Ponphang-Nga*
Kasetsart University Chalermphrakiat Sakon Nakhon Province Campus, Thailand

P3-126 **Potential Risk of Cadmium in Soil-Plant System as a Result of Long-Term (10 Yr) Pig Manure Application**
Yonggang Xu and Wantai Yu*
Institute of Applied Ecology,Chinese Academy of Sciences, China

P3-127 **Efficiency of Combined Application of Rhizobia and Pgpr Containing Acc-Deaminase for Promoting Growth of Legumes on Marginal Lands of Pakistan**
Zahir Ahmad Zahir[1]*, Muhammad Usman Jamshaid[1], Muhammad Yahya Khan[1], Maqshoof Ahmad[2] and Hafiz Naeem Asghar[1]
[1] University of Agriculture, Faisalabad, Pakistan; [2] University College of Agriculture, Islamia University. Bahawalpur, Pakistan

P3-128 **Enhanced Soil Health for Sustaining Higher Productivity and Food Security in India**
A Subba Rao[1] and Brij Lal Lakaria[2]*
[1] Indian Council of Agricultural Research, India; [2] Indian Institute of Soil Science, India

P3-129 **Evaluation of Soil Health, Sustainability Index, Carbon Sequestration Potential and Productivity under Organic and Conventional Rice (oryza Sativa L.) Production Systems**
Surekha Kuchi*, P C Latha, K V Rao, R M Kumar and B C Viraktamath
Directorate of Rice Research, India

P3-130 **The Effect of Organic Biogas Slurry Nutrient Solution on the Contents of Soluble Sugar and Vitamin C in Vegetables**
Ying Wang*
Heilongjiang Academy of Agriculutral Science, China

P3-131 **Microbial and Biochemical Properties of Soils from Several Production Areas of Platycodon Grandiflorum A. D.C. and Panax Ginseng C.A. Meyer in South Korea**
Ma Rosnah Rubenecia[1], Pil Dae Seo[1], Bo Seung Kim[1], Jae Sang Park[1], Seon Woo Cha[2], Young Sup Ahn[2], Venecio Ultra Jr.[3] and Sang Chul Lee[3]*
[1] Kyungpook National University, Korea; [2] Department of Herbal Crop Research, NIHHS, RDA, Korea; [3] Catholic University of Daegu, Korea

P3-132 **Nitrogen Simple Effect on Agronomic Charasteristics of Lettuce & Spinach**
Mahdi Sadeghi Pour Marvi*
Soil Sciences, University of Tehran, Iran

P3-133 **Assessing the Environmental Risk of Contaminants of Emerging Concern in Fields Receiving Reclaimed Wastewater**
Laosheng Wu[1] and Jianming Xu[2]
[1] University of California, Riverside/Zhejiang University, China, USA; [2] Zhejiang University, China

P3-134 **A Productive Maize-Soybean Relay Intercropping System for Food Production and Soil Fertility in Southwest China**
Chun Song*, Benying Su, Taiwen Yong and Wenyu Yang
Sichuan Agricultural University, China

P3-135 **Analysis of Maize Production Intensification Strategies for Heterogeneous Smallholder Farms in Kenya and Zimbabwe**
Shamie Zingore[1], Mirasol Pampolino[2], Regis Chikowo[3] and Adrian Johnston[4]
[1] International Plant Nutrition Institute, Kenya; [2] International Plant Nutrition Institute, Philippines; [3] Michigan State University, Malawi; [4] International Plant Nutrition Institute, Canada

P3-136 **Influence of Farmer Management Practices on Soil Fertility, Maize Production Intensificivity and the Role of Cattle Manure in Recovery of Degraded Soils Smallholder Farming Systems in Zimbabwe**
Shamie Zingore[1] and Leonard Rusinamhodzi[2]
[1] International Plant Nutrition Institute, Kenya; [2] CIMMYT, Zimbabwe

P3-137 **Managing Rice Residues and Fertilization to Improve Nutrient Use and Productivity of Irrigated Lowland Rice**
Michelle Castillo[1]*, Cezar Mamaril[1], Erlinda Paterno[2], Pompe Sta Cruz[2], Pearl Sanchez[2] and Rodrigo Badayos[2]
[1] Philippine Rice Research Institute, Philippines; [2] University of the Philippines Los Banos, Philippines

P3-138 **A Comparison of Crop Response and Biomass Yield of Four Different Crops Irrigated with Abattoir Wastewater**
Raghupathi Matheyarasu*, Balaji Seshadri, Sonia Shilpi, Nanthi S Bolan and Ravi Naidu
UniSA, CERAR, CRC-CARE, Australia

P3-139 **Effect of Integrated Nutrient Management on Yield of Brown Sarson (brassica Rapa L.) and Post Harvest Physico-Chemical Properties in Alfisols of Temperate Kashmir**
Subhash Chand Sartaz. A. Wani
SKUAST-K, India

P3-140 **The Impacts of Extreme Weather Events on Crop Productivity and Soil Fertility under Future Climate**
Yui Osanai[1]*, David Tissue[1], Ian Anderson[1], Michael Braunack[2], Michael Bange[2] and Brajesh Singh[1]
[1] University of Western Sydney, Australia; [2] CSIRO Plant Industry, Australia

P3-141 **Chemical and Physical Conditions of Silt in Caves and Pits of Dinaric Karst in Croatia**
Boris Vrbek
Croatian Forest Research Institute, Croatia

P3-142 **Leaching Behavior of Chlorpyrifos and its Main Metabolite Tcp through 5 Types of Soil Columns in Laboratory Conditions**
Sun Baoli
Chinese Academy of Agricultural Sciences/ Key Laboratory of Agro-Environment, Ministry of Agriculture1, caas, China

P3-143 **Source Apportionment of Lead and Cadmium in Cropland Near a Contaminated Site: A Combined Approach of Positive Matrix Factorization and Geostatisticalanalysis**
Jianlong Xue, Yuyou Zhi, Jiachun Shi*, Laosheng Wu* and Lingzao Zeng
Zhejiang University, China

P3-144 **Soil Spectroscopy: The Present of Soil Monitoring to Accomplish Food Security**
Marco Nocita* and Luca Montanarella
European Commission - Joint Research Centre, Italy

P3-145 **Growth, Yield and Physiology of Fluted Pumpkin (telfaria Occidentalis) Planted on Heavy Metal Contaminated Soil in Response to Different Organic Amendments**
Sifau Adejumo[1], Samson Ogunjinmi[2]* and Adeniyi Togun[1]
[1] University of Ibadan, Nigeria; [2] Oyo State College of Agriculture, Nigeria

P3-146 **Irrigated Lands and Food Security in Central Asia**
Igor Hadjamberdiev[1], Bulat Hadjamberdiev[1] and Ibragimjon Damulajanov[2]
[1] Toxic Action Network Central Asia, Kyrayzstan; [2] Eco Clearn Ferghana, Uzbekistan

P3-147 **French National Network Devoted to Ensure Durable Recycling of Organic Residues in Agriculture: Field Experiment Network, Professional Network and Shared Databases**
Michaud Aurelia[1]*, Bell Alix1, Heurtaux Mathilde[2] and Houot Sabine[1]
[1] EGC, INRA, France; [2] ACTA, France

P3-148 **Temporal Dynamics of Soil Physical Conditions for Crop Growth under a Range of Tillage Practices and the Impact on the Performance of Contrasting Modern Cereal Varieties**
Paul Hallett[1]*, Ron Stobart[2], Timothy S. George[3], Nathan Morris[2], Adrian C. Newton[3], Tracy A. Valentine[3] and Blair M. Mckenzie[3]
[1] University of Aberdeen, United Kingdom; [2] NIAB TAG, Morley Office, United Kingdom; [3] The James Hutton Institute, United Kingdom

P3-149 **Phytomanagement of Biosolids-Amended Soil**
Juergen Esperschuetz[1]*, Obed Lense[1], Nicholas Dickinson[1], Craig Anderson[2], Simon Bulman[2], Rainer Hofmann[1], Dharini Paramashivam[1], Nimlesh Balaine[1], Timothy Clough[1] and Brett Robinson[1]
[1] Lincoln University - Faculty of Agriculture & Life Sciences, New Zealand; [2] Lincoln Campus, New Zealand

P3-150 **Developing a National Framework to Evaluate Indicators for Soil Health Monitoring**
Brajesh Singh
University of Western Sydney, Australia

P3-151 **Identifying Microbial Drivers and Key Modulators of Soil Health in Grain Cropping Systems**
Pankaj Trivedi*, Ian C Anderson and Brajesh K Singh*
University of Western Sydney, Australia

P3-152 **Amounts of Heavy Metals in Paddy Soils of the Khorat Basin, Northeast Thailand**
Tawatchai Inboonchuay[1], Anchalee Suddhiprakarn[1], Irb Kheoruenromne[1], Somchai Anusontpornperm[1] and Robert J. Gilkes[2]
[1] Kasetsart University, Thailand; [2] University of Western Australia, Australia.

P3-153 **Concentrations of Metals and Metalloids in Different Size Fractions of Contaminated Podzols and Their Relationship with Contents in Foodstuffs**
Manuela Inacio[1]*, Orquidia Neves[2] and Virginia Pereira[1]
[1] University of Aveiro, Portugal; [2] University of Lisbon, Portugal

P3-154 **Effects on AG, BE, CO, HG, SB, TH, Tl, U and V in Sugarcane from Application of Sewage Sludge in a Tropical Soil**
Cassio Hamilton Abreu-Junior[1]*, Jose Carlos Poppl Neto[2] and Ademir Franco[2]
[1] Center for Nuclear Energy in Agriculture - CENA/USP, Brazil; [2] CENA/USP, Brazil

P3-155 **Effects of Chromium Nitrate on Phytohormone Content and Mitotic Activity in Maize (zea Mays L.) Seedlings**
Filiz Aygun Erturk[1], Guleray Agar[2], Esra Arslan[2]*, Medine Gulluce[2], Metin Turan[3] and Fikrettin Sahin[3]
[1] Department of Molecular Biology and Genetic, Turkey; [2] Ataturk University, Turkey; [3] Yeditepe University, Turkey

P3-156 **Assessing Environmental Risks of China's Intensive Agricultural Land-Use Systems: A Case Study in Dongting Lake Basin**
Dong Zhuo and Liming Liu*
China Agricultural University, China

P3-157 **Soil Chemical Health Assessment of Taro Soils of Samoa**
Danilo Guinto[1], Seuseu Tauati[2], Ataotaulelei Sae[2], Hewage Perera[1] and Dean Seuoti[1]
[1] University of the South Pacific, Western Samoa; [2] Ministry of Agriculture and Fisheries, Western Samoa

P3-158 **Assessing Economic Benefits of Arbuscular Mycorrhizal Fungi as a Universal Indicator of Soil Health**
Lynette Abbott* and Sarah Lumley
The University of Western Australia, Australia

P3-159 **Assessing the Qualities of Soils in Different Soil Series Using Scoring Functions and Geostatistical Methods in the Harran Plain, Southeastern Turkey**
Ali Volkan Bilgili[1]*, Mehmet Ali Cullu[1], Cigdem Kucuk[1] and Harold Van Es[2]
[1] Harran University, Turkey; [2] Cornell University, USA

P3-160 **Soil Contamination with Heavy Metals and its Impact on Food Security in China**
Jianwu Li and Hailong Wang*
Zhejiang A & F University, China

P3-161 **Mechanisms of Non-Wetting Soils under Laboratory Conditions**
Matthias Leopold*, Falko Mathes, Jeremy Bougoure and Daniel Murphy
The University of Western Australia, Australia

P3-162 **Vermiculture Technology: An Eco-Tool in Sustainable Agroindustrial Waste Management and Remediation of Contaminated Soil in Thailand**
Chuleemas Boonthai Iwai*
Khon Kaen University, Thailand

P3-163 **Influences of Different Fertilization on the Accumulation of Nitrate Nitrogen in Swamp Cabbage and Soil Enzyme Activity**
Ming-Yang Cao[1], Xue-Feng Hu[1]*, Cheng-Long Yan[1], Hui-Hui Dai[1] and Jian Wang[2]
[1] Shanghai University, China; [2] Agricultural Technology Service Center of Qingpu District, China

P3-164 **Search for a Universal Soil Quality Index**
Anil Kumar Singh[1], Nishant K. Sinha[2] and Usha Kiran Chopra[2]
[1] RVS Agriculture College, India; [2] Indian Agricultural Research Institute, India

P3-165 **Long-Term Monitoring of Pesticide Residues in Paddy, Upland and Orchard Soils in Korea**
Park Byung-Jun, Kim Chan-Sub, Park Kyung-Hun, Kim Jin-Hyo, Choi Geun-Hyoung and Lim Sung-Jin
National Academy of Agricultural Science, Rural Development Administration, Korea

P3-166 **Status of Zinc and Iron Content in Different Rice Genotypes (grain And Straw) and Rice Growing Soils Across Different Agro Climatic Zones of Karnataka, India**
Chakpram Birendrajit[1] and Prakash Nagabovanalli B[2]
[1] Central Agricultural University, India; [2] University of Agricultural Sciences, India

P3-167 **Qualitative Attributes of Soil and Cocoa Forastero in Bahia, Brazil**
Guilherme Amorim Homem De Abreu Loureiro[1], Quintino Araujo[2]* and Jose Claudio Faria[3]
[1] State University of Santa Cruz, Brazil; [2] Cocoa Research Center / Ceplac and State University of Santa Cruz, Brazil; [3] Ceplac / Cocoa Researche Center, Brazil

P3-168 **Investigation of Heavy Metal Concentrations in Upland Soils of Gangwon Province in Korea**
Byeong Sung Yoon[1]*, Seung Chul Choi[1], Soo Jeong Lim[1], Su Jeong Heo[1], Jae Rok Kim[1] and Seong Soo Kang[2]
[1] Gangwon Provincial Agricultural Research & Extension Services, Korea; [2] National Academy of Agricultural Science, RDA, Korea

P3-169 **Response of Lettuce to Cadmium Exposure at Different Growth Stage**
Jeongsik Park[1], Min-Suk Kim[2], Namin Koo[3], Seung Mo Nam[1] and Jeong-Gyu Kim[2]*
[1] Korea Testing and Research Institute, Korea; [2] Korea University, Korea; [3] Korea Forest Research Institute, Korea

P3-170 **Impact of Copper and Rotenone on Seedling Growth of Chinese Cabbage and the Soil Activity**
Sang-Beom Lee*, Hong-Sik Nam and Jin-Ho Kim
National Academy of Agricultural Science, Korea

P3-171 **Proper Ranges of Soil Ph and Pe for Crop Growth**
Yoo Hak Kim, Seong Soo Kang, Myung Sook Kim, Myung Suk Kong, Chang Hoon Lee and Taek Keun Oh
National Academy of Agricultural Science, RDA, Korea

C1.2-2: Soil Data, Spatial information Systems and Interpretation Procedures

Soil Art *Featured artist: Future Farmers (Amy Franceschini, Dan Allende, Ian Cox, and Lode Vranken), USA, www.futurefarmers.com/soilkitchen*

P3-172 **Land Resources Assessment for Agricultural Use in Some Areas West of Nile Delta, Egypt**
Khaled Mohamed Darwish[1]* and M. A. El-Semary[2]
[1] City for Scientific Research and Technology Applications, Egypt; [2] National Research Center (NRC), Egypt

P3-173 **Uncertainty Assessment for Mapping Changes in Soil Organic Matter Using Sparse Legacy Soil Data and Dense New-Measured Data in a Typical Black Soil Region of China**
Yongcun Zhao[1]*, Xianghua Xu[2] and Xuezheng Shi[3]
[1] Chinese Academy of Sciences, China; [2] Nanjing University of Information Science &Technology, China; [3] Institute of Soil Science, Chinese Academy of Sciences, China

P3-174 **Origin and Distribution of the Gypsiferous Soil in Iraq**
Fouad Al-Kaabi
The University of Queensland, Australia

P3-175 **Assessment of Land Suitability and Availability for Food Crop Development Using a Fuzzy Set Approach in Gis**
Sumbangan Baja[1]*, Umi Nurmiaty[2], Hazairin Zubair[1] and Kaimuddin Kaimuddin[1]
[1] Hasanuddin University, Indonesia; [2] Pangkep State Polytechnic of Agriculture, Indonesia

P3-176 **The Value of Soil Information for the Development of a National Forest Site Classification System**
Josua Louw
Nelson Mandela Metropolitan University, South Africa

P3-177 **Spatial Distribution and Influencing Factor of Soil Moisture in Typical Depression Area of Karst Region**
Jiguang Zhang, Yirong Su, Hongsong Chen*, Xiangli Kong, Wei Zhang, Jiuquan Zhang and Hongbo Liang
Chinese Academy of Sciences, China

P3-178 **The "Land Unit and Soil Capability Map of Sardinia (Italy)" at a 1:50,000 Scale: The Pilot Area of Pula-Capoterra**
Andrea Vacca and Vittorio Alessandro Marrone
University of Cagliari, Italy

P3-179 **Information Technology-Based Nutrient Management for Higher Crop Production in India**
Sudeepta Patra*
Banasthali Vidyapith, Banasthali, Rajasthan, India

P3-180 **Petrological and Analytical Characterization of the Benue Watershed Topomorphic Vertisols of North Cameroon: Spatial Analysis and Agricultural Potential Evaluation**
Primus Azinwi Tamfuh, Dieudonne Bitom and Emmanuel Djoufac Woumfo
University of Yaounde I, Cameroon

P3-181 **Soils Monitoring as an Extension Tool**
Simon Proust[1] and Peter Bacon[2]
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P3-182 **Modernizing Soil Interpretations for Changing Needs**
Michael Robotham*, Maxine Levin and David Hoover
National Soil Survey Center, USDA Natural Resources Conservation Service, USA

P3-183 **Circus Method for Modelling Soil Distribution on Hydrothermic Gradients**
Konstantin Baykov
Institute of Soil Science and Agrochemistry, Russia

P3-184 **Soil Classification Using Near Infrared Spectroscopy and Ga-Plsda Procedure**
Hongtu Xie[1], Jinsong Zhao[2]*, Qiubing Wang[3], Yueyu Sui[4], Shuangyi Li[3], Jingkuan Wang[3], Xueming Yang[5] and Xudong Zhang[6]
[1] State Key Laboratory of Forest and Soil Ecology, Chinese Academy of Sciences, China; [2] Huazhong Agricultural University, China; [3] Shenyang Agricultural University, China; [4] Chinese Academy of Sciences, China; [5] Agriculture & Agri-Food Canada, Canada; [6] Chinese Academy of Sciences, China

P3-185 **Priority Selection Rating of Sampling Density and Interpolation Method for Detecting The Spatial Variability of Soil Organic Carbon**
Dongsheng Yu[1]*, Zhongqi Zhang[2]* and Xuezheng Shi[1]*
[1] Chinese Academy of Sciences, China; [2] Jiangsu Normal University, China

P3-186 **Improving Identification and Description of Horizon Boundaries to Enhance Soil Data Quality**
Einar Eberhardt*
Federal Institute for Geosciences and Natural Resources (BGR), Germany

P3-187 **Spatial Behavior of Soil Properties on Different Tillage Management (Case Study; A Semiarid Region, Iran)**
Saeedeh Marzvan*, Hossein Asadi and Naser Davatgar
Giulan University, Iran

P3-188 **Sustainable Forestry: The Imperative of Soil Mapping in Forest Resource Inventory, Modelling and Management in Scotland, UK**
Andrew John Nolan[1]*, Bill Rayner[2], Andy Kennedy[2], Christine Brown[2], David Donnelly[1], John Bell[1], David Henderson[1], Willie Towers[1], Richard Hewison[1], Luke Beesley[1] and David Riach[1]
[1] James Hutton Institute, United Kingdom; [2] Forestry Commission, United Kingdom

P3-189 **Soil Climate Parameters of Russia: A Cartographic Analysis**
Oleg Reshotkin[1]*, Oleg Khudyakov[1], Irina Alyabina[2], Dmitry Konyushkov[3] and Tatyana Ananko[3]
[1] Russian Academy of Sciences, Russia; [2] Moscow State University, Russia; [3] Russian Academy of Agricultural Sciences, Russia

P3-190 *(Moved to O57-6)* **Hydrophysical Database for Brazilian Soils: Challenges and Perspectives**
Marta Ottoni[1]*, Maria Leonor Lopes Assad[2] and Otto Correa Rotunno Filho[3]
[1]Geological Survey of Brazil, Brazil; [2] Federal University of Sao Carlos, Brazil; [3] Federal University of Rio de Janeiro, Brazil

P3-191 **Baselines for Near-Total and Bioavailable Macro and Micronutrients in Topsoils of Continental Portugal**
Manuela Inacio* and Virginia Pereira
University of Aveiro, Portugal

P3-192 **Environmental Indicators as a Tool for Improving Soil And Crop Management in Cereal Cropping Systems**
Oscar Del Hierro[1], Olatz Unamunzaga[1], Ana Aizpurua[1], Roberto Perez[1], Ana Pilar Armesto[2], Alberto Lafarga[2] and Gerardo Besga[1]*
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P3-193 **Evaluating the Effects of Interpolation Method and Sample Size on Accuracy of Spatial Variability of Soil Variables And Reducing Sampling Cost**
Fahimeh Khoramizadeh[1]* and Naser Davatgar[2]*
[1] Soil Science Society of Iran (SSSI), Iran; [2] Rice Research Institute, Iran

P3-194 **Using Gis in Soil Science: A Framework for Use of Digital Spatial Data in Agronomic Studies**
Sarah Jane Hill, Gregory Hancock and Garry Willgoose
The University of Newcastle, Australia

P3-195 **The Soils of the Upper Reach of the Heihe River Basin in Relation to Aeolian Dust**
Fan Yang, Gan-Lin Zhang*, De-Cheng Li, Yu-Guo Zhao, Jin-Ling Yang and Feng Liu
Chinese Academy of Sciences, China

P3-196 **Available Micronutrients (ZN, CU, FE, MN and B) Status and their Relationship with Soil Properties in Soils of Krishnarajpet Taluk Mandya District Karnataka, India**
Bhavitha N. C.[1], Chidanandappa H.m.[2] and Dhananjaya Bc[3]
[1] UAS Bangalore, India; [2] UAS, GKVK, India; [3] KVK, UAS Bangalore, India

P3-197 *(Moved to O57-5)* **Spatial Variability of Electrical Conductivity of Salt-Affected Soils in Northeast Thailand**
Porntip Phontusang[1], Roengsak Katawatin[2]*, Krirk Pannangpetch[1], Sununtha Kingpaiboon[1] and Rattana Lerdsuwansri[3]
[1] Khon Kaen University, Thailand; [2] Groundwater Research Center, Khon Kaen University, Thailand; [3] Thammasat University, Thailand

P3-198 **The Spatial Variability of Soil Heavy Metals in Xinji County, North China Plain**
Renzhao Mao[1], Yuanzhong Wang[2], Dongmei Li[2], Guijie Zhang[3] and Feifei Zhang[3]
[1] Chinese Academy of Sciences, China; [2] Agricultural Environment Protection and Monitoring Station of Hebei Province, China; [3] Center for Environment Monitoring of Shijiazhuang City, China

P3-199 **Web Tools for Soil Data Interpretation for Urban Planning and Management**
Borut Vrscaj and Tomaz Vernik
Agricultural Institute of Slovenia, Slovenia

P3-200 **A Web-Based Spatial Decision Supporting System (S-DSS) for Landscape Sustainable Management: The Soilconsweb Project**
A. Bonfante[1], P. Manna[1], A. Agrillo[1], A. Basile[1], G. Buscemi[2], A. Carbone[2], M. Colandrea[3], A. D'Antonio[4], R. De Mascellis[1], M.Iamarino[2], G. Langella[1], A. F. Mileti[2], L. Minieri[2], P. Pileri[5], F. Terribile[2]
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P3-201 **Spatiotemporal Changes in Farmland Flooding and Soil Series Distribution Characteristics in Korea**
Byung-Joon Jung, Kyung-Do Lee*, Suk-Young Hong, Yi-Hyun Kim and Sang-Il Na
National Academy of Agricultural Science, Korea

P3-202 **Historical Development and Utilization of Forest Soil Information in Korea**
Seung Woo Lee[1], Dong Hoon Ji[1], Yong Suk Kim[2] and Jin Hyun Jeong[3]
[1] Korea Forestry Promotion Institute, Korea; [2] Nation Forest Research Instituee, Korea; [3] National Foresry Cooperative Federation, Korea

P3-203 **Soil Data, Information System and its Interpretation in Korea**
Suk Young Hong*, Yi-Hyun Kim, Kyoung-Do Lee and Sang-Il Na
RDA, Korea

P3-204 **Using Remote Sensing and Spatial Modeling Approaches for Land Evaluation in Dry Wadis, Eastern Desert, Egypt**
Belal A.A.*, Mohamed E.S. and Shalaby A.
National Authority for Remote Sensing and Space Sciences, Egypt

C1.4-2: The Progress in Development and Harmonization of Soil Classifications

P3-205 **Properties, Genesis, Classification and Sustainable Management of Soils from Ijebu East, South Western Nigeria**
Ademola Raji[1], Gabriel Oluwatosin[2], Abayomi Fasina[3]* and Olubunmi Shittu[3]
[1] University of Ilorin, Nigeria; [2] Institute of Agricultural Research and Training Ibadan, Nigeria; [3] Ekiti State University, Nigeria

P3-206 **World Soil Classification, The Systems Approach, And Multiscale Gis Mapping**
Alexandra Nikiforova[1]*, Maria Fleis[2] and Michail Borisov[2]
[1] Lomonosov Moscow State University, Russia; [2] Institute of Geography, Russian Academy of Science, Russia

P3-207 **Classification of Maritime Burozems of the Souther Far East of Russia**
Boris Pshenichnikov[1], Nina Pshenichnikova[2] and Anna Pshenichnikova[1]*
[1] Far Eastern Federal University, Russia; [2] Pacific Institute of Geography FEB RAS, Russia

P3-208 **Correlation of Gley Soils Classified According to the Croatian Soil Classification with the WRB**
Stjepan Husnjak[1]*, Vedran Rubinic[1], Andrija Spoljar[2] and Boris Vrbek[3]
[1] University of Zagreb Faculty of Agriculture, Croatia; [2] College of Agriculture at Krizevci, Croatia; [3] Croatian Forest Research Institute, Croatia

P3-209 **Problems of Nomenclature Correlation and Soil Classification in Amur River Basin**
Nina Pshenichnikova[1]*, Viktor Ermoshin[1] and Boris Pshenichnikov[2]
[1] Pacific Institute of Geography FEB RAS, Russia; [2] Far Eastern Federal University, Russia

P3-210 **Suggestion for Modification of the Setting of Salt Affected Soils in the New Wrb Classification Key**
Erika Micheli[1], Marta Fuchs[1]*, Vince Lang[1], Tamas Szegi[1] and Szabolcs Szabari[2]
[1] Szent Istvan University, Hungary; [2]Government Office for Jasz-Nagykun Szolnok County, Hungary

P3-211 **Characteristics and Classification of Soils in Sabah, Malaysia, Borneo**
Jutom Ongkosing, Norma Awang Besar and Jaloh M.B.
Universiti Malaysia Sabah, Malaysia

P3-212 **Conceptual Clustering for the Geotechnical Data Analysis**
Piotr Bilski
Warsaw University of Life Sciences, Poland

P3-213 **Research of Pedogenetic Features and Classified Characterization of Calcification Process in Ustic Cambosols Take Ustic Cambosols in Henan Province for Example**
Bing Ju* and Kening Wu*
China University of Geosciences (Beijing), China

P3-214 **Automatic Computer Estimation of Geotechnical Soil Profile Based on Cpt and Dmt Probes**
Jaroslaw Kurek*, Michal Kruk*, Piotr Bilski* and Simon Rabarijoely*
Warsaw University of Life Sciences, Poland

P3-215 **Indian System of Soil Classification Scheme: A Proposed Framework**
Bipin Bihari Mishra*
Bihar Agricultural University, India

P3-216 **Localization Study of Virgin Abies Faxoniana Forest Soil at the Kangding-Tibet, China**
Li Liu, Bin Liu, Dan Ma and Cheng-De Luo*
College of Forestry in Sichuan Agriculture University, China

C2.1-1: Quantifying Evaporative Fluxes from Terrestrial Surfaces

P3-217 **Relationship between Physical and Chemical Soil Characteristics and Greenhouse Gases Emission in an Indigenous Agroforestry System in Western Honduras**
Oscar Ferreira Catrileo[1]*, Mariela Rivera[2], Maria Del Pilar Hurtado[2] and Marco Rondon[3]
[1] Universidad Nacional de Agricultura, Honduras; [2] Centro Internacional de Agricultura Tropical, Colombia; [3] International Development Research Centre, Canada

P3-218 **Lysimeter Use to Evaluate Drought Effects on Water Consumption and Growth of Trees**
Juergen Mueller*
Thuenen Institute of Forest Ecosystems, Germany

P3-219 **Characteristics of Stem Sap Flow of Apple Trees in the Loess Tableland**
Li Wang* and Yan Mu
Northwest A&F University, China

P3-220 **Separating Evapotranspiration and Precipitation from Noise - A New Filter Routine for High Resolution Lysimeter Data**
Andre Peters*, Thomas Nehls and Gerd Wessolek
TU Berlin, Germany

P3-221 **Simple Consistent Models for Water Retention and Hydraulic Conductivity in the Complete Moisture Range**
Andre Peters*
TU Berlin, Germany

P3-222 **Trends of Soil Evaporation over the Past 30 Years in South Korea**
Mehmet Aydin, Yeong-Sang Jung* and Jae E Yang
Kangwon National University, Korea

C2.1-3: Hydro-Ecological Observatories and Advances in Soil Measurements and Sensors

Soil Art *Featured artist: Maria Michails, Treia Studios, USA, treiastudios.net*

P3-223 **Water Retention Characteristics of Soils over the Whole Moisture Range: Evaluation and Comparison of Laboratory Methods**
Henrike Mielenz[1]*, Lisa Heise[2], Kristin Jaenicke[1], Hella Rosenkranz[1] and Wolfgang Durner[1]
[1] Technische Universitaet Braunschweig, Germany, presently at CSIRO Ecosystem Sciences, Australia; [2] Universidad Autonoma de San Luis Potosi (UASLP), Mexico

P3-224 **The Constructed Catchment ´chicken Creek´ as a Tool to Disentangle Feedbacks Between Soils, Surface Structures, Vegetation and Hydrology during Initial Ecosystem Development**
Wolfgang Schaaf*, Michael Elmer, Werner Gerwin and Markus Zaplata
Brandenburg University of Technology, Germany

P3-225 **Using Water Footprinting to Reduce the Impact of the Use of Agricultural Water and Agrichemicals on Water Resources**
Indika Herath[1]*, Steve Green[2], David Horne[3], Ranvir Singh[3] and Brent Clothier[2]
[1] Coconut Research Institute, Lunuwila, Sri Lanka; [2] The New Zealand Institute for Plant & Food Research, New Zealand; [3] Massey University, New Zealand

P3-226 **Self-Calibrating Heat Flux Plate Improves Measurement of Soil Heat Flux Density**
Xiaoyang Peng and Tusheng Ren*
China Agricultural University, China

P3-227 **Comparison of Time Domain Reflectometry, Capacitance Methods and Neutron Scattering in Soil Moisture Measurements**
Ali Khorasani[1]*, Lee King Heng[2], Mir Ahmad Moosavi Shalmani[1], Nejat Piervali Bieranvand[1] and Ebrahim Moghiseh[1]
[1] Agriculture, Medicine and Industry Research School, Iran; [2] Soil and Water Management and Crop Nutrition Section, IAEA, Austria

P3-228 **Influence of Soil Electrical Conductivity and Dielectric Dispersion Parameters on Time-Amplitude Characteristics of TDR Reflectograms**
Agnieszka Szyplowska*, Andrzej Wilczek, Grzegorz Solecki, Anna Nakonieczna and Wojciech Skierucha
Polish Academy of Sciences, Poland

P3-229 **Porous Ceramic Plate Sensor for Effective Non-Rainfall Tdr Measurements**
Anna Nakonieczna*, Andrzej Wilczek, Marcin Kafarski, Agnieszka Szyplowska and Wojciech Skierucha
Polish Academy of Sciences, Poland

P3-230 **Errors and Improvements in Thermogravimetric Measurement of Soil Water Content**
Douglas Cobos[1], Leo Rivera[2]*, Shaun Weldon[2] and Colin Campbell[1]
[1] Decagon Devices and Washington State University, USA; [2] Decagon Devices, USA

P3-231 **Tum Critical Zone Observatory**
Joerg Voelkel and Marie Eden
Technische Universitaet Muenchen TUM, Germany

P3-232 **The Mechanism of Subsurface Flow Generation at a Hillslope Farmland of Entisol, Sw China**
Pei Zhao and Xiangyu Tang*
CAS(Chinese Academy of Sciences), China

P3-233 **The Evaluation of Soil Hydraulic Conductivity Using Fractal Dimension of Soil Particle Size Distribution and Geostatistics**
Leila Rezaee* and Naser Davatgar
Rice Research Institute of Iran (RRII), Iran

P3-234 **Soil Freezing and Thawing Processes of Three Landscapes in the Middle Reaches of Heihe River Basin, China**
Jun Yi, Ming'an Shao* and Ying Zhao*
Northwest A&F University, China

P3-235 **Saturated Field Hydraulic Conductivity, Ksat Estimation of Tropical Peat in Sarawak, Malaysia Using Modified Auger Hole Method and Empirical Hazen's Formula**
Guan Xhuan Wong[1]*, Ayob Katimon[2] and Lulie Melling[1]
[1] Tropical Peat Research Laboratory Unit, Malaysia; [2] Universiti Malaysia Perlis (UniMaP), Malaysia

P3-236 **The Effect of Biochar on Water Vapor Movement in Soil during Winter Period Revealed with Stable Isotope Technology**
Yijie Wang, Guitong Li* and Baoguo Li
China Agricultural University, China

P3-237 **Characterisation of Hydro-Mechanical Properties of Soil Using Ultrasonic Waves**
Jeanne Luong*, Marie-France Destain and Benoit Mercatoris
University of Liege, Belgium

P3-238 **Comparison of Field Measured Unsaturated Hydraulic Conductivity with Four Estimating Models Based on Texture for Two Soils in Khuzestan, Iran**
Kobra Makvandi[1], Alireza Zahirnia[2] and Hydar Ali Kashkuli[3]
[1] Saman Abrah Company, Iran; [2] Sugarcane and by Products Development Company, Iran; [3] Shahid Chamran University, Iran

P3-239 **Variability in Water Footprints: A Case Study of New Zealand Wines**
Indika Herath[1], Steve Green[2], David Horne[3], Ranvir Singh[3] and Brent Clothier[2]
[1] Coconut Research Institute, Sri Lanka; [2] New Zealand Institute for Plant and Food Research, New Zealand;
[3] Massey University, New Zealand

P3-240 **Mulching Influences on Soil Water, Temperature, and Frost Depth are Related to Crop Sequence in a No-Till Maize/soybean Rotation**
Zhengchao Tian and Tusheng Ren*
China Agricultural University, China

P3-241 **Comparing Water and Nitrogen Use Efficiencies under Different Cropping Systems in the North China Plain Based on Model Approach**
Kelin Hu[1], Huanyuan Wang[2], Yongping Wei[3], Baoguo Li[1], Liang Jin[4] and Karl Stahr[5]
[1] China Agricultural University, China; [2] Key Laboratory of Degraded and Unused Land Consolidation Engineering, the Ministry of Land and Resources of China, Xi'an, Shanxi Province, China; [3] the University of Melbourne, Australia
[4] Heilongjiang Academy of Agriculture Sciences, China;
[5] Hohenheim University, Germany

P3-242 **Application of Penta-Needle Heat Pulse Probe for Variably Saturated Water Flux Estimation**
Masaru Sakai[1] and Scott Jones[2]
[1] Mie University, Japan; [2] Utah State University, USA

P3-243 **Assessment of Agricultural Land Capability Using Gis and Radar Imagery, Central Province, Papua New Guinea**
Matt Dell, Doyle Richard* and Colin Birch
University of Tasmania, Australia

P3-244 **Soil Water Carrying Capacity for Vegetation in a Small Watershed on the Loess Plateau of China**
Mingan Shao*
Institute of Geographic Sciences and Natural resources research, CAS, China

P3-245 **Evaluation of Least Limiting Water Range by Vegetative and Physiological Parameters of Pistachio Seedlings**
Davoud Zarehaghi[1]*, Mohammad Reza Neyshabouri[1] and Manoucher Gorji[2]
[1] University of Tabriz, Iran; [2] Soil Science, University of Tehran, Iran

P3-246 **Determination Moisture Stress Pistachio Tree by Using Sap Flow Measurement**
Davoud Zarehaghi[1], Mohammad Reza Neyshabouri[1] and Manoucher Gorji[2]
[1] University of Tabriz, Iran; [2] University of Tehran, Iran

P3-247 **Estimating Precipitation and Actual Evaporation from Precision Lysimeter Measurements**
Frederik Schrader[1], Wolfgang Durner[2]*, Johann Fank[3], Thomas Putz[4] and Ute Wollschlager[5]
[1] Johann Heinrich von Thunen Institut, Germany; [2] TU Braunschweig, Germany; [3] Joanneum Research, Austria;
[4] Forschungszentrum Julich GmbH, Germany; [5] Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany

P3-248 **Estimation of Soil -Water Characteristic Curve Using One-Point Measurement**
Ali Asghar Zolfaghari[1]*, Mehdi Shorafa[2], Mohammad Hossein Mohammadi[3] and Manouchehr Gorji[2]
[1] University of Semnan, Iran; [2] University of Tehran, Iran
[3] University of Zanjan, Iran

P3-249 **Assessment of Soil Chemical Properties (EC, SAR, pH) in Downstrems of a Qanat and Well (Case Study: Meibod)**
Mohammad Hossein Mokhtari*, Mohammad Zare Ernani, Mohammad Ali Hakim Zadeh and Safoora Kargar Shoruki
Yazd University, Iran

P3-250 **A Multi-Frequency Approach to Inexpensive, Accurate Dielectric Measurements of Soil Water Content**
Colin Campbell, Paolo Castilione, Gaylon Campbell, Jolene Lafferty, Douglas Cobos and Matthew Galloway*
Research and Development, Decagon Devices, Inc., USA

P3-251 **Using Hyper-Spectral Data to Estimate the Van Genuchten-Mualem Soil Hydraulic Properties**
Ebrahim Babaeian[1]*, Mehdi Homaee[1], Harry Vereecken[2], Carsten Montzka[2] and Ali Akbar Norouzi[3]
[1] Tarbiat Modares University, Iran; [2] Agrosphere (IBG-3), Forschungszentrum Julich GmbH, Germany; [3] Soil Conservation and Watershed Management Research Institute (SCWMRI), Iran

P3-252 **Water Content Extraction in Eucaliptus Plantation**
Dalvan Reinert*, Juliana Prevedello, Neiva Gelain, Claudine Barcellos and Frederico Fleig
Federal University of Santa Maria, Brazil

P3-253 **Retrieving Soil Surface Water Content from Envisat/asar Radar Data**
Ebrahim Babaeian[1]*, Mehdi Homaee[1], Ali Akbar Norouzi[2] and Maryam Dehghani[3]
[1] Tarbiat Modares University, Iran; [2] Soil Conservation and Watershed Management Research Institute (SCWMRI), Iran; [3] Shiraz University, Iran

P3-254 **Monitoring of Water Fluxes by Sp and Tdr in the Unsaturated Vadoze Zone during an Intense Cyclone**
Frederic Feder[1]*, Anthony Finizola[2], Marie Crovisier[2] and Nicolas Payet[2]
[1] CIRAD, UPR 'recyclage et risque', Senegal; [2] Universite de la Reunion, France

P3-255 **Fdr Probe Structure Influence on the Soil Dielectric Spectrum Measurement**
Jinghui Xu
Northwest A&F University, China

P3-256 **Multi-Season, Continuous Measurements of Redox Potential. Value, Methods and Challenges**
Michel Vorenhout*
University of Amsterdam & MVH Consult, Netherlands

P3-257 **Estimation of Soil Moisture Content in Corn Field Using L-, C-, X-Band Scatterometer Data**
Yihyun Kim, Sukyoung Hong, Kyoungdo Lee and Sangil Na
NAAS, RDA, Korea

P3-258 **Satellite Remote Sensing-Based Evapotranspiration in Northeast Asia**
Keunchang Jang* and Sinkyu Kang
Kangwon National University, Korea

P3-259 **Automated Irrigation System Using Soil Moisture Sensor in Horticulture**
Jongyun Kim*
Pai Chai University, Korea

P3-260 **Comparison Pore Structure and Physical Properties between Anthropogenic Paddy Field Soil and Natural Soil**
Hyen Chung Chun, Y. K. Sonn, C.W. Park, H.J. Cho, K.C. Song and B.K. Hyun
National Academy of Agricultural Science, RDA, Korea

P3-261 **Sub-Milli Observation of Reduction and Reoxidation of Flooded Soil with Different Water Flow Rate**
Megumii Takeuchi, Kunio Watanabe* and Nobuo Toride
Mie University, Japan

P3-262 **Assessing Organic Carbon Dynamics in Salt-Affected Soils Amended with Gypsum and Plant Residues**
Sevda Amini[1], Hossein Ghadiri[1], Chengrong Chen[1] and Petra Marschner[2]
[1] Griffith University, Australia; [2] University of Adelaide, Australia

C2.3-2: Life in Soils - Distribution and Function of Soil Microorganisms in a Changing Environment

Soil Art *Featured artist: Daro Montag, Falmouth University, Research Group in Art, Nature & Environment (RANE), UK, www.falmouth.ac.uk/content/dr-daro-montag*

P3-263 **In Vitro Phosphate Solubilization Study by Phosphate Solubilizing Microorganisms Isolated from Citrus Rhizosphere**
Romi Hirekhan* and Chaitanya Deshpande
Soil Science National Research Centre for Citrus, India

P3-264 **Optimization of Environmental Factors Affecting Biodegradation of Chlorpyrifos in Soil Slurry by Enterobacter Sp. Swlc2**
Zia Chishti[1], Khaliq Ur Rehman Arshad[1], Sarfraz Hussain[2]* and Muhammad Arshad[1]
[1] University of Agriculture, Faisalabad, Pakistan; [2] Institute of Soil Chemistry and Environmental Sciences, Faisalabad, Punjab, Pakistan

P3-265 **Evaluation of Phosphorus Bioavailability Using Soil Enzyme Activities: Comparison with Chemical Extraction Methods and Crop P Content**
Hitoshi Moro[1]*, Takashi Kunito[1] and Tsuyoshi Sato[2]
[1] Shinshu University, Japan; [2] Nagano Agricultural Experiment Station, Japan

P3-266 **Efficacy of Auxin Producing Bacillus Strains in Changing the Root Architecture of Arabidopsis Thaliana and Growth Promoting Ability in Wheat Plant**
Atia Iqbal and Shahida Hasnain
University of the Punjab, Pakistan

P3-267 **Soil Ph and Ammonium Concentrations Affect Acid Soil Microbial Nitrification Process**
Jing Che[1], Xue Qiang Zhao[2], Xue Zhou[1], Zhong Jun Jia[2] and Ren Fang Shen[2]*
[1] State Key Laboratory of Soil and Sustainable Agriculture, Chinese Academy of Sciences, University of Chinese Academy of Sciences, China; [2] State Key Laboratory of Soil and Sustainable Agriculture, Chinese Academy of Sciences, China

P3-268 **Molecular Diversity and Colonization of Arbuscular Mycorrhizal Fungi Associated with Rhizosphere of Cowpea (vigna Unguiculata (l.) Walp.) as Affected by Edapho-Climatic Conditions**
Jean-Martial Johnson[1]*, Pascal Houngnandan[1], Aboubacry Kane[2], Odile Chatagnier[3], Kadidia Sanon[4], Marc Neyra[5] and Diederik Van Tuinen[3]
[1] Universite d'Abomey-Calavi, Benin; [2] Universite Cheikh Anta Diop de Dakar, Senegal; [3] INRA/Agrosup/Universite de Bourgogne, France; [4] Institut de l'Environnement et des Recherches Agricoles, Burkina Faso; [5] Institut de Recherche pour le Developpement, France

P3-269 **Which Biotic Agent Responsible for Ammonia Oxidation in the Pine Forest Stand of Jinyun Mountain, Chongqing?**
Sarwee Joe-Wia Faeflen[1] and Xianjun Jiang[2]*
[1] Southwest University, China; [2] Key Laboratory of Eco-Environments in Three Gorges Reservoir Region (Ministry of Education), Southwest University, China

P3-270 **Rhizobium Inoculation for Mitigating the Salinity Stress in Maize (zea Mays) under Gnotobiotic Conditions**
Qasim Ali*, Zahir Ahmad Zahir, Hafiz Naeem Asghar, Muhammad Javed Akhtar, Muhammad Kamran, Muhammad Yahya Khan and Sanaullah Yasin
University of Agriculture, Pakistan

P3-271 **Screening Of Bacterial Endophytes for Carbonic Anhydrase Activity and Drought Tolerance of Wheat**
Ana Aslam*, Zahir Ahmad Zahir, Muhammad Naveed and Hafiz Naeem Asghar
University of Agriculture, Pakistan

P3-272 **Abundance of Root Seedling Michoryza Infection in Tragulasi Coastal Forest Vegetation Area Alas Purwo National Park Banyuwangi**
Marietta Zahra*
Padjadjaran University, Indonesia

P3-273 **Phosphorus or Nitrogen Limitation in Microorganisms in Some Japanese Forest Soils**
Hitoshi Moro, Takashi Kunito, Yuriko Komukai and Hideshige Toda
Shinshu University, Japan

P3-274 **The Potential of flexibacter Sp. Isolated from an Oil Palm Plantation on Peat in Sarawak, Malaysia as a Biological N2o Mitigation Strategy**
Sharon Yu Ling Lau1[2], Lulie Melling[2] and Yasuyuki Hashidoko[1]*
[1]Hokkaido University, Japan; [2]Tropical Peat Research Laboratory Unit, Malaysia

P3-275 **Invasive Plants Enrichment of Soilborne Pathogens Affecting Native Plant Species**
Anthony Caesar[1]*, Thecan Caesar-Ton-That[1] and Diane Larson[2]
[1] U. S. Department of Agriculture, Agricultural Research Service, USA; [2] U. S. Geological Survey, Northern Prairie Wildlife Research Center, USA

P3-276 **Effect of Cd Contamination on Soil Microbial Community Structure in Flue-Cured Tobacco Rhizosphere**
Lin Gao, Jiguang Zhang and Guoming Shen*
Tobacco Research Institute of CAAS, China

P3-277 **Development of Soil Microbial Community Structure at the Primary Developing Stage of Parent Material of a Mollisol by Different Land Uses and Aggregate Sizes**
Na Li[1], Bin Zhang[2] and Xiaozeng Han[1]
[1] Northeast Institute of Geography and Agroecology, CAS, China; [2] Chinese Academy of Agricultural Sciences, China

P3-278 **Genetic and Physiological Structures of Bacterial Communities in Agricultural Soil Irrigated with Untreated Wastewater for more than 40 Years**
Tianlin Shen[1], Jiulan Dai[1], Min Zhang[1] and Renqing Wang[2]*
[1] Shandong Agricultural University, China; [2] Shandong University, China

P3-279 **An Investigation on Whether the Presence of Mycorrhizae Influences the Response of Cocoa Seedlings to Water Stress**
G. U. Chibuike[1]* and A. J. Daymond[2]
[1] University of Nigeria, Nigeria; [2] The University of Reading, Whiteknights, Reading, United Kingdom

P3-280 **The Role of Characteristic Archaeal Community in Nitrogen Circulation of the Boreal Forest Bed Soil**
Reika Isoda[1], Shintaro Hara[1], Teemu Tahvanainen[2] and Yasuyuki Hashidoko[1]*
[1]Hokkaido University, Japan; [2] University of Eastern Finland, Finland

P3-281 **Effects of Agricultural Practices and Crop Residue Management on Earthwrom Communities and Soil Physico-Chemical Properties in Cultivated Fields (belgium)**
Aboulkacem Lemtiri[1]*, Gilles Colinet[1], Taofic Alabi[1], Claire Olivier[2], Yves Brostaux[1], Jerome Pierreux[1], Bernard Bodson[1], Eric Haubruge[1] and Frederic Francis[1]
[1] University of Liege, Gembloux Agro BioTtech, Belgium; [2] Walloon Agricultural Research Centre, Belgium

P3-282 **Degradation of Iprodione and 3,5-Dca by Degrading Bacteria Isolated from Ryegrass (lolium Perenne) Rhizospheric Soils**
Marco Campos[1]*, Sebastian Elgueta[1], Cynthia Urrutia[1], Dimitrios Karpouzas[2] and Maria Cristina Diez[1]
[1] Centre of Environmental Biotechnology, BIOREN, Universidad de La Frontera., Chile; [2] University of Thessaly, Greece

P3-283 **The Study of Indigenous Thyme Plant Rhizosphere Bacterial Isolates in the Availability of Iron in Calcareous Soils**
Faiza Hossaini*, Ahmad Ali Pourbabaee, Hossein Ali Alikhani and Leila Mohammadi
University of Tehran, Iran

P3-284 **Beneficial Effects of Phosphate-Solubilizing Bacteria Isolated from Acid Sulfate Soils of East Coast of Peninsular Malaysia on Rice Seedlings Grown at Different Aluminium Concentrations**
Radziah Othman[1]*, Qurban Panhwar[1], Shamshuddin Jusop[1] and Umme Aminun Naher[2]
[1] Universiti Putra Malaysia, Malaysia; [2] Bangladesh Rice Research Institute, Bangladesh

P3-285 **Compositions and Properties of Microbial Residues Formed by Three Single Species Fungi and Mixed Strains in Cellulose-Containing Liquid Media**
Shuai Wang, Sen Dou*, Lina Ma, Yan Li and Shasha Yu
Jilin Agricultural University, China

P3-286 **Organic Amendments Supply Nitrifiers and Enhance Nitrification in Soil**
Ramya Thangarajan[1]*, Nanthi S Bolan[1], Ravi Naidu[1] and Aravind Surapaneni[2]
[1] CERAR/ CRC CARE, University of South Australia, Australia; [2] South East Water, Australia

P3-287 **Vertical Divergence of Microfungal Communities through the Depth in Different Soil Formations in the Western Negev Desert, Israel**
Isabella Grishkan[1]* and Giora Kidron[2]
[1] University of Haifa, Israel; [2] The Hebrew University of Jerusalem, Israel

P3-288 **Evaluation the Effect of Two Herbicide's Ingredients on Some Soil Microbiological Parameters**
Zsolt Sandor*, Agnes Zsuposne Olah, Janos Katai and Magdolna Tallai
University of Debrecen, Hungary

P3-289 **Molecular Characterization of Groundnut (arachis Hypogaea) Rhizosphere and Nodule Bacteria to Improve Crop Yield**
Rabia Khalid*, Rifat Hayat, Safdar Ali and Ummay Amara
PMAS-Arid Agriculture University, Pakistan

P3-290 **Dynamics of Soil Amino Sugars during Maize Growing Season under Different Management**
Lu Huijie[1]*, He Hongbo[2] and Zhang Xudong[2]
[1] Zhejiang University, China; [2] State Key Laboratory of Forest and Soil Ecology, Chinese Academy of Sciences, China

P3-291 **Effects of 1-Octyl-3-Methylimidazolium Chloride ([omim]cl) Ionic Liquid on the Functional Diversity of Soil Microbial Communities and Enzymatic Activities**
Pengpeng Guo, Lusheng Zhu*, Jinhua Wang*, Jun Wang and Hui Xie
Shandong Agricultural University, China

P3-292 **Soil Microbial Diversity and Community Structure as Affected by Endosulfan Residual**
Pengpeng Guo, Lusheng Zhu*, Jinhua Wang*, Jun Wang and Hui Xie
Shandong Agricultural University, China

P3-293 **Bacterial Versus Fungal Contributions to Microbial Community Structure in Grasslands of Differing Management History**

Corey Palmer[1]* and Louise Egerton-Warburton[2]
[1] Northwestern University, USA; [2] Chicago Botanic Garden, USA

P3-294 **Phenotypic Composition of a Key Grass Species and Soil Processes in a Semiarid Grassland after a Rain Pulse Event**
Eduardo Medina-Roldan[1]*, Elisabeth Huber-Sannwald[2] and J. Tulio Arredondo[2]
[1] Xi'an Jiaotong-Liverpool University, China; [2] Instituto Potosino de Investigacion Cientifica y Tecnologica, Mexico

P3-295 **Effects of ZN, CU and Al Metals on Tetracycline Antibiotic Resistance in the Chicken Manure**
Mei-Hsia Huang and Yu-Min Tzou*
National Chung Hsing University, Taiwan

P3-296 **Evaluate Nematode Assemblage Analysis as Indicators of Long-Term Organic Amendments on Soil Quality: A Comparison between Upland and Paddy Field Soil**
Manqiang Liu[1]*, Yudi Liu1, Xiaoyun Chen[1], Mingwei Wang[1], Daming Li[2], Qianru Huang[2], Huixin Li[1] and Feng Hu[1]
[1] Nanjing Agricultural University, China; [2] Jiangxi Institute of Red Soil, China

P3-297 **Modeling Carbon and Nitrogen Mineralisation from Diverse Crop Residues Measured from Incubation Studies**
Hai Nguyen Trung[1]*, Merv E. Probert[2] and Anthony M. Whitbread[1]
[1] University of Goettingen, Germany; [2] CSIRO Ecosystems Sciences, Australia

P3-298 **Detection of Soil Microbial Activity by Infrared Thermography (irt)**
Bjorn Kluge[1]*, Andre Peters[1], Jaane Krueger[2] and Gerd Wessolek[1]
[1] TU Berlin, Germany; [2] Albert-Ludwigs-Universitat-Freiburg, Germany

P3-299 **No Correlation between Plant Diversity and AMF Diversity but Significant Variations of AMF Community Along Karst Vegetation Restoration**
Yueming Liang, Xunyang He, Yirong Su* and Xiangbi Chen
Institute of Subtropical Agriculture Chinese Academy of Sciences, China

P3-300 **Winter Behaviors of Soil Microbial Biomass P and Alkaline Phosphatase as Affected by Tillage and Fertilization**
Yichao Shi, Noura Ziadi* and Roger Lalande
Agriculture and Agri-Food Canada, Canada

P3-301 **Biofortification of Iron in Chickpeas by Plant Growth Promoting Rhizobacteria**
Saira Khalid*, Ana Aslam, Hafiz Naeem Asghar and Zahir Ahmad Zahir
University of Agriculture, Faisalabad, Pakistan

P3-302 **Studying the Population Variability of Microorganisms Adapted to the Conditions of Soil Degradation**
Laziza Gafurova*, Sayyora Murodova and Yulduzkhon Abdullayeva
National University of Uzbekistan, Uzbekistan

P3-303 **Soil Enzymatic Activities and Microbial Functional Diversity under Different Agricultural Management Practices in Northern France**
Nadia Bennegadi-Laurent*, Marie-Paule Norini, Wassila Riah, Isabelle Trinsoutrot-Gattin and Karine Laval
Esitpa- Ecole d'ingenieurs en Agriculture, France

P3-304 **Soil and Climate Effects on Cowpea Rhizobial Diversity in Pernambuco**
Thiago Pontes Lira, Amanda Cordeiro Melo Souza, Tamiris Kempner and Mario Andrade Lira Junior*
Federal Rural University of Pernambuco, Brazil

P3-305 **Relationships between the Soil Chemical Properties and Microbiological Activity in a Long-Term Field Experiment in Hungary**
Janos Katai, Agnes Olah Zsuposne, Magdolna Tallai and Zsolt Sandor
University of Debrecen, Hungary

P3-306 **Regulatory Role of Microbes in Soil Microaggregate Formation and Carbon (c) Sequestration**
Vivek Ravindran, Pankaj Trivedi and Brajesh K Singh*
University of Western Sydney, Australia

P3-307 **Impact of Different Cultural Rotations (pastures-Crop) on Microbial Community in Agricultural French Context**
Marc Legras[1]*, Caroline Bailleul[1], Christophe Gangneux[1], Josselin Bodilis[2], Nadia Laurent[1], Jeanne-Chantal Dur[3], Nathalie Cheviron[3], Wassila Riah[1], Karine Laval[1] and Isabelle Gattin[1]
[1] Esitpa - Ecole d'Ingenieurs en Agriculture, France; [2] Universite de Rouen, France; [3] UR 251, Research Center Versailles-Grignon, France

P3-308 **Soil Bacterial Community Structure Associated with Perennial Vegetation on Agricultural Land in South-Western Australia**
Kanako Tomita[1]*, Sharlene Boey[1], Christine Whitely[1], Deborah Bowie[1], Charlotte Powis[2], Andrew Whiteley[1], Barbara Cook[1] and Lynette Abbott[1]
[1] The University of Western Australia, Australia; [2] South Coast Natural Resource Management Inc., Australia

P3-309 **Biodegradation of Phenanthrene in Saline Soils by New Consortium of Halophilic Bacteria**
Ahmad Ali Pourbabaee* and Malek Hossein Shahriari
University of Tehran, Iran

P3-310 **The Thallus Formed by Streptosporangium with Cellulose and its Alkali Extraction Components**
Xiangling Tian, Sen Dou*, Yan Li, Tingting Cui and Miao Yu
Jilin Agricultural University, China

P3-311 **Hybrid Rice Promotes Ammonia Oxizing Baceria Relative to Ammonia Oxidizing Archaea in Rhizosphere at Different Growing Stages**
Qaiser Hussain[1] and Genxing Pan[2]
[1] Pir Mehr Ali Shah Arid Agriculture University, Pakistan; [2] Nanjing Agricultural University, China

P3-312 **Microbial Reductive Dechlorination of Polychlorinated Dibenzo-P-Dioxins in Soils and Sediments from Areas Sprayed with Agent Orange**
Vien M. Duong[1]*, Haggblom Max M.[2], Joong-Wook Park[2] and Young-Beom Ahn[2]
[1] Cantho University, Viet Nam; [2] The State University of New Jersey, USA

P3-313 **Role of Microbial Inoculums on Jatropha Curcas L. Growth and Soil Carbon Stock**
Pankaj Srivastava and Nandita Singh
CSIR-National Botanical Research Institute, India

P3-314 **Effects of Artificially Putting Frogs into Paddy Fields on the Prevention of Pests and Diseases of Rice**
Qing Teng[1], Xue-Feng Hu[1]*, Ming-Yang Cao[1], Fan Luo[1] and Min-Yong Yang[2]
[1] Shanghai University, China; [2] Agricultural Technology Promotion Center of Jinze Town, China

P3-315 **The Status of Arbuscular Mycorrhiza Fungi at the Different Vegetation in Tailing Deposition Areas of Freeport Indonesia, Timika**
Irnanda Aiko Fifi Djuuna*, Nunang May and Maria Massora
The State University of Papua Manokwari, West Papua Province-Indonesia

P3-316 **Soil Microbial Population and Distribution as Affected by Various Farming Systems in Batangas, Philippines**
Rosario Monsalud, Marilyn Brown and Florentino Monsalud
University of the Philippines Los Banos, Philippines

P3-317 **Exploration of Oligotrophic Bacteria from Soils in Taiwan**
Yi-Ying Kao, Yu-Hsuan Huang, Fo-Ting Shen* and Chiu-Chung Young
National Chung Hsing University, Taiwan

P3-318 **Hydrolytic Characterization of Root Nodulating Bacteria**
Hung-Wei Pi, Fo-Ting Shen* and Chiu-Chung Young
National Chung Hsing University, Taiwan

P3-319 **Development of Pgpr Consortium for Potential Yield of Scented and Non-Scented Rice during Nascent Stage of Organic Farming on Indo-Gangetic Plains of India**
Janardan Yadav
Banaras Hindu University, India

P3-320 **Isolation and Evaluation of Inoculation Effects of Beneficial Microbes on Growth of Corn and on Soil Nutrient Content in Ten Field Sites**
Jocelyn Zarate[1]*, Jenny Rose Trinidad[1], Peter John Gabo[1], Lovely Luar[1], Reynaldo Dela Cruz[1], Severino Tumamang[2] and Edita Sunio[3]
[1] University of the Philippines, Philippines; [2] Cagayan Valley Integrated Agricultural Research Center (CVIARC), Philippines; [3] Cagayan Valley Lowland and Marine Research Outreach Station (CVLMROS) Agricultural Pilot Center (APC), Philippines

P3-321 **Spatial Ecology of Bacteria at the Microscale in Soil**
Xavier Raynaud[1] and Naoise Nunan[2]
[1] Universite Pierre et Marie Curie, France; [2] CNRS, France

P3-322 **Bio-Remediation of Salt Affected Soils through Halophilic Microbes**
Sanjay Arora[1], Meghna J. Vanza[2], Chirag Bhuva[2] and Purvi N. Patel[3]
[1] Regional Research Station, India; [2] Veer Narmad South Gujarat University, India; [3] CSSRI, India

P3-323 **Controls on Microbial Activity in Chromium Contaminated Abandoned Agricultural Soils: A Case Study of Kasur, Pakistan**
Muhammad Riaz[1]*, Rabia Parveen[1], Muhammad Saleem Arif[1], Mehnaz Roohi[1], Shermeen Tahir[2], Muhammad Atif Riaz[2], Muhammad Ibrahim[1], Sabir Hussain[1], Shafaqat Ali[1], Tahira Yasmeen[1], Tanvir Shahzad[1], Leon Van Den Berg[3] and Farhat Abbas[1]
[1] Government College University Faisalabad, Pakistan; [2] Nuclear Institute for Agriculture and Biology Faisalabad, Pakistan; [3] Radboud University Nijmegen, Netherlands

P3-324 **Integrated Effect of Fly Ash and Chemical Fertilizers on Phosphate Solubilizing Bacteria Isolated from a Rhizospheric Soil of Forestry Species**
Sudha Jala Kohli[1]* and Dinesh Goyal[2]
[1] Tilkamanjhi Bhagalpur University, India; [2] Thapar University, India

P3-325 **Microbial Population in the Rhizosphere Soil of Various Crop Plants as Affected by Salinity**
Dilfuza Egamberdieva*, Dilfuza Jabborova and Vyacheslav Shurigin
National University of Uzbekistan, Uzbekistan

P3-326 **Effects of Long-Term Swine Slurry Applications on Inoculum Potential of the Arbuscular Mycorrhizal Fungi in Soil under Conventional and No Tillage, South of Brazil**
Arnaldo Colozzi-Filho[1]*, Andre Shigueyoshi Nakatani[2] and Diva Souza Andrade[1]
[1] Instituto Agronomico do Parana, Brazil; [2] EMBRAPA Soja, Brazil

P3-327 **Comparison of Three Macrophytes to Remediate Co-Contaminated Soils with Polycyclic Aromatic Hydrocarbons (pahs) and Trace Elements (tes), Implications for Green Urban Infrastructures**
Marie-Charlotte Leroy[1]*, Marc Legras[2], Franck Lederf[3], Vincent Moncond'huy[1], Stephane Marcotte[4] and Florence Koltlalo[3]
[1] INFRA Services, France; [2] Esitpa - School of Agricultural Engineering, France; [3] IUT d'Evreux - Universite de Rouen, France; [4] INSA de Rouen, France

P3-328 **Weathering of Illitic Soil in the Presence of Arbuscular Mycorrhizal Fungi Glomus Mosseae and Glomus Intraradices and Pseudomonas Fluorescens Bacteria with Corn Plant**
Farshad Alishahi, Ahmad Heidari, Hossein Ali Alikhani*, Leila Mohammadi and Faiza Hossaini
University of Tehran, Iran

P3-329 **Biological Activities in the Rhizosphere Soils of Medicinal Plants from Chatkal Biosphere Reserve of Uzbekistan**
Dilfuza Egamberdieva, Sayora Muradova, Lazizakhon Gafurova and Gulchekhra Nabieva
National University of Uzbekistan, Uzbekistan

P3-330 **Suitability of Ergosterol as Soil Fungal Indicator Depending on Extraction and Sampling Date in Arable and Grassland Soils**
Marc Legras*, Caroline Bailleul, Isabelle Gattin and Karine Laval
Esitpa - Ecole d'Ingenieurs en Agriculture, France

P3-331 **Diversity of Soil Invertebrates in Sugar Cane Area after Land Application of Sugar Factory Distillery Spent Wash**
Duangrat Thongphak*, Chuleemas Boonthai Iwai, Thammared Chuasavathi and Mongkon Ta-Oun
Khon Kaen University, Thailand

P3-332 **Isolation and Conservation of Fluorescent Pseudomonads Strains from Rhizosphere of Wheat**
Azadeh Bapiri*, Nazanin Khakipour and Atena Alipour Dehaki
Islamic Azad University, Savadkooh, Iran

P3-333 **Seasonality of Arbuscular Mycorrhizal Fungi and Mineral Nutrition in Temperate Fruit Trees**
Andre Freire Cruz[1]*, Marcio De Carvalho Pires[2], Maria Lucrecia Gerosa Ramos[2] and Luiz Edurado Bassay Blum[3]
[1] Kyoto Prefectural University, Japan; [2] Universidade de Brasilia, Faculdade Agronomia e Veterinaria, Brazil; [3] Universidade de Brasilia, Brazil

P3-334 **Spatial Variation of Soil Microbial Indicators in Different Soil Textural Classes Planted with Elaeis Guineensis (Oil Palm)**
Tasren Nazir Mahamooth[1]*, Swee Sian Tan[1], Petronella Gerald[1] and Kah Joo Goh[2]
[1] Advanced Agriecological Research Sdn. Bhd., Malaysia; [2] Applied Agricultural Resources Sdn. Bhd., Malaysia

P3-335 **Bioaugmentation-Assisted Phytoextraction of Co, Pb and Zn By a Phosphate-Solubilizing Bacterium Isolated from Metal-Contaminated Mines**
Buddhi Charana Walpola[1], Kkiu Arunakumara[2], Chan-Jung Lee[3] and Min-Ho Yoon[4]*
[1] Chungnam National University, Sri Lanka; [2] University of Ruhuna, Sri Lanka; [3] RDA, Korea; [4] Chungnam National University, Korea

P3-336 **Long-Term Monitoring of Chemical Properties from Upland Soils in Chungnam Province**
Moon-Tae Choi[1]*, Seong-Soo Kang[2], Yeo-Uk Yun[1], Jin-Il Lee[1], Won-Keun Lee[1] and Yun-Kyu Nam[1]
[1] ChungCheongnam-do Agricultural Research and Extension Services, Korea; [2] NAAS, Korea

P3-337 **Indolacetic Acid Production and Phosphate Solubilization Ability of Several Microorganisms Isolated from Panax Ginseng Rhizosphere**
Khalid Hussein Hussein, Yeong Sang Jung Jung, Seong Bae Park Park and Jin Ho Joo Joo*
Kangwon National University, Korea

P3-338 **Plant Growth Promotion by Rhizobacteria Isolated from Pinus Koraiensis on Chinese Cabbage (brassica Rapa)**
Khalid Hussein Hussein and Jin Ho Joo Joo*
Kangwon National University, Korea

P3-339 **Isolation and Detection of Genes Responsible for Pyoverdines Biosynthesis in Pseudomonas Putida KNUK9**
Khalid Hussein Hussein and Jin Ho Joo *
Kangwon National University, Korea

C2.4-1: Mineralogy and Reactivity of Soil Microsites

Soil Art *Featured artist: Sarah Hirneisen, USA, glass and soil studies, www.sarahhirneisen.com*

P3-340 **Study of Genesis, Morphology and Clay Mineralogy in Kakan Area, Kohgiluyeh-Va-Buyer-Ahmad Province, Iran**
Sirous Shakeri[1]*, Seyed Ali Abtahi[2], Hamidreza Owliaie[3] and Abolfazl Azadi[2]
[1] Payame Noor University, Shiraz University, Iran; [2] Shiraz University, Iran; [3] Yasouj University, Iran

P3-341 **Characterization of Phosphorus Species in Allophanic and Non-Allophanic Andisols Using Density Separations, Chemical Fractionation, Solution 31p NMR, And Xanes Spectroscopy**
Akira Takamoto[1], Yohey Hashimoto[1]* and Rota Wagai[2]
[1] Tokyo University of Agriculture and Technology, Japan; [2] National Institute for Agro-Environmental Sciences, Japan

P3-342 **Transformation Processes in Bentonites- Epsp and Mock-Up-Cz In-Situ Experiments**
Irena Hanusova*, Marketa Dvorakova and Marek Vencl
Radioactive Waste Repository Authority, Czech Republic

P3-343 **Comparative Analyses of Soils Formed on Carbonate Rocks**
Eszter Nemeth[1], Istvan Sajo[2] and Andras Bidlo[1]
[1] University of West Hungary, Hungary; [2] Hungarian Academy of Sciences, Hungary

P3-344 **Mineralogical Investigation of Soils Formed on Carbonate Rocks in the Bukk-Highlands (hungary)**
Eszter Nemeth[1], Istvan Sajo[2] and Andras Bidlo[1]
[1] University of West-Hungary, Hungary; [2] Hungarian Academy of Sciences Research Centre for Natural Sciences Institute of Materials and Environmental Chemistry, Hungary

P3-345 **Mineralogical and Chemical Characterization of Arid Granitic Soils after Prolonged Exposure to Acid Mine Drainage**
Ian H. Smuts, Catherine E. Clarke* and Ailsa G. Hardie
University of Stellenbosch, South Africa

P3-346 **Palygorskite in Soils of Arid Regions**
Nataliya Chizhikova*
V.V.Dokuchaev Soil Science Institute, Russia

P3-347 **Effects of Termites on Clay Composition and Properties of Ferralsol Materials in the Upper Katanga (d.r. Congo)**
Basile Mujinya Bazirake[1]*, Florias Mees[2], Geert Baert[3] and Eric Van Ranst[3]
[1] University of Lubumbashi, Ghent University, Zaire; [2] Royal Museum for Central Africa, Belgium; [3] Ghent University, Belgium

P3-348 **Chemical Speciation and Dissolution of Cd in Paddy Soils in Various Redox Gradients**
Mitsuhiro Furuya[1], Yohey Hashimoto[1]* and Noriko Yamaguchi[2]
[1] Tokyo University of Agriculture and Technology, Japan; [2] National Institute for Agro-Environmental Sciences, Japan

P3-349 **Recycle of Crop Residues in Fields through Fermentation**
Cheng-Long Yan, Xue-Feng Hu*, Ming-Yang Cao, Hui-Hui Dai and Fan Luo
Shanghai University, China

P3-350 **Solubility and Chemical Speciation of Arsenic and Lead in a Contaminated Soil Using Amendments Containing Zeolite, Iron and Magnesium Oxides**
Kentaro Kameda and Yohey Hashimoto*
Tokyo University of Agriculture and Technology, Japan

P3-351 **Solubility of Silver Derived from Nanoparticles and Silver Nitrate in Oxidized and Reduced Soils**
Satoshi Takeuchi[1], Yohey Hashimoto[1]* and Satoshi Mitsunobu[2]
[1] Tokyo University of Agriculture and Technology, Japan; [2] University of Shizuoka, Japan

P3-352 **A Study on Impacts and Mechanism of Mechanical Activation (planetary Milling) of Yichang Phosphate Rock Samples**
Jin Lili[1], Wang Lingli[2] and Shi Yuanliang[2]*
[1] Liaoning Forestry Vocation-Technical College, China; [2] Chinese Academy of Sciences, China

P3-353 **Comprehensive Chemical Investigations in the Sopron Wine Region (hungary)**
Eszter Nemeth[1], Imre Horvath[2], Andras Bidlo[1] and Tamas Hofmann[2]
[1] University of West Hungary, Hungary; [2] Palos Wine Cellar, Hungary

C2.4-3: Minerals as Regulators of Carbon Flow Through Soils

Soil Art *Featured artist: Peter Ward, UK, North Devon Earth Pigments, peterwardearth.carbonmade.com*

P3-354 **Effect of Change in Throughfall on Soil Respiration under a Temperate Mature Forest, Northeastern China**
Xu Xingkai[1]*, Duan Cuntao[1], Chen Xin[1], Wu Haohao[1,2], Wang Lu[1,3], Luo Xianbao[1,3], Fang Jingyun[4]
[1] Chinese Academy of Sciences, China; [2] Chang'an University, China; [3] University of the Chinese Academy of Sciences, China; [4] Peking University, China

P3-355 **Influence of Simulated Precipitation on Dryland Soil Respiration in the Loess Plateau, China**
Jun Wang[1]*, Quanquan Liu[1], Rongrong Chen[1] and Upendra M. Sainju[2]
[1] Northwest University, China; [2] USDA-ARS, USA

P3-356 **Temperature and Rhizosphere Interaction Regulates the Dynamics of Inorganic and Organic Carbon in a Limed Acidic Soil**
Waqar Ahmad[1], Feike A. Dijkstra[1], Ram C. Dalal[2] and Balwant Singh[1]
[1] The University of Sydney, Australia; [2] Innovation and the Arts, Australia

C3.3-2: Advances in Rhizosphere Regulation and Soil Nutrient Management

Soil Art *Featured artist: Urbaniahoeve (Debra Solomon and Mariska van den Berg), Netherlands, www.urbaniahoeve.nl*

P3-357 **The Effect of Mycorrhiza Fungi (vam) on Phosphorus Absorption by Corn Plant at Northern Khouzestan, Iran**
Ali Gholami*
Islamic Azad University, Iran

P3-358 **Effect of Combined Biologic and Priming Seed Treatments on Growth Indices of Nigella Sativa L**
Mohammad H. Sayyari-Zahan*, Mohammad Ali Behdani, Fateme Cheraghi and Hojatollah Azarpeyvand
University of Birjand, Iran

P3-359 **Increasing Rate of Decomposition of Sugarcane Bagasse by Decomposer Fungi and Helping Bacteria Azotobacter for Preparation Multipurpose Biological Fertilizer**
Ladan Razikordmahaleh*
Department of Environment, Iran

P3-360 **Utilization of Agricultural Wastes as a Raw Material for Organic Fertilizer Applied on Paddy Rice Planted in an Acid Sulphate Soil**
Dedik Budianta*
University of Sriwijaya, Indonesia

P3-361 **Research Progress on Usage of Agricultural Wastes in Soilless Growing Medium Production**
Ruqin Fan and Zhenhua Zhang*
Jiangsu Academy of Agricultural Sciences, China

P3-362 **Activity of Urease, Phosphatase and Dehydrogenase in Submerged Soil under Integrated Nutrient Management with Transplanted Rice**
Pc Rao[1], Ch S Ramalakshmi[2]* and G Padmaja[3]
[1] Acharya NG Ranga Agricultural University, India; [2] Soil Science, RARS, Anakapalle, India; [3] ANGRAU, India

P3-363 **Effects of Calcium on Copper Rhizotoxicity to and Accumulation in Grapevines in Solution Culture**
Kai-Wei Juang[1], Hung-Yu Lai[2], Pei-Yi Chen[1] and Bo-Ching Chen[2]*
[1] National Chiayi University, Taiwan; [2] MingDao University, Taiwan

P3-364 **Chemical Mechanism of Potassium Release from Soil as Influenced by Root Exudates**
Tiezhao Yang, Bing He, Gang Xue and Yunji Zhu*
Henan Agricultural University, China

P3-365 **Improving Nutrient Use Efficiency and Yield of Canola in Eastern Canada**
Bao-Luo Ma[1]*, D.I. Smith[2], J.I. Shang[1], J. Whalen[2], C. Caldwell[3], H. Earl[4], A. Vanasse[5] and P. Scott[5]
[1] Eastern Cereal and Oilseed Research Centre, Canada; [2] McGill University, Canada; [3] Dalhousie University, Canada [4] University of Guelph, Canada; [5] Laval University, Canada

P3-366 **Effect of Nitrate Influx and Efflux on Nitrate Accumulation in Lettuce and Spinach**
Zahra Gheshlaghi*, Reza Khorassani, Gholamhosain Haghni* and Mohhamad Kafi
Ferdowsi University of Mashhad, Iran

P3-367 **Nutrient Availability in Rice Rhizosphere under Conventional and Drip Irrigation with Film Mulch Cultivation**
Changzhou Wei*, Qichao Zhu, Yongwen Lei, Juan Wang and Jinlong Zhu
Shihezi University, China

P3-368 **Potassium Management of Fen Soils with the Habitant Type 6510**
Sabine Bernsdorf[1], Stefan Schob[1] and Rupp Holger[2]
[1] Martin-Luther-Universitat Halle-Wittenberg, Germany; [2] Helmholtz-Zentrum fur Umweltforschung-UFZ, Germany

P3-369 **Techniques for Enhancing Fertilizer Use Efficiency in Sugarcane**
Dhondiram Phonde*, Preeti Deshmukh, Jyoti Kharade and Rutuja More
Vasantdada Sugar Institute, India

P3-370 **Integration of Chemical and Biofertilizers Improved the Availability of Nitrogen and Phosphorus in Soil but Did Not Influence the Growth of Young Natural Rubber Plants**
Mercykutty Joseph, Kochuthresiamma Joseph and Jacob Mathew
Rubber Research Institute of India, India

P3-371 **Burkholderia Kururiensis as an Important Root-Associating, Diazotrophic Bacterium for a Highly Productive Cross-Hybrid Rice Cultivated in Unfertilized Paddock**
Yasuyuki Hashidoko[1]*, Gyeryeong Bak[1], Reika Isoda[1] and Masahiko Maekawa[2]
[1] Hokkaido University, Japan; [2] Okayama University, Japan

P3-372 **Rock Phosphate Enriched Compost Vis-A-Vis Mineral Fertilization: Effect on Soil Chemical and Biological Properties**
Dipak Ranjan Biswas* and Pravash Chandra Moharana
Indian Agricultural Research Institute, India

P3-373 **Influence of Diazotrophic Bacterial Inoculation in Combination with Nitrogen on Growth, Biomass Production, Yield and Nutrient Concentration of Rice**
A. R. M. Solaiman*, M. A. Baset Mia and G. M. A. Hossain
Bangabandhu Sheikh Mujibur Rahman Agricultural University, Bangladesh

P3-374 **Modelling of Nutrients Release from Water-Borne Polymer Coated Controlled Release Fertilizers**
Yazhen Shen, Changwen Du* and Jianmin Zhou
Institute of Soil Science Chinese Academy of Sciences, China

P3-375 **Long-Term Effects of Chemical Fertilizer and Recycled Manure on Soil Chemical and Biological Properties**
Hua Zhou, Wantai Yu*, Qiang Ma, Chunming Jiang and Yonggang Xu
Chinese Academy of Sciences, China

P3-376 **Impact of Tillage and Crop Residues Restitution on Phosphorus Distribution within Topsoil in Loamy Soils of Wallonia (Belgium)**
Sophie Barbieux*, Malorie Renneson, Florian Cobert, Bernard Bodson and Gilles Colinet
Universite de Liege (GxABT), Belgium

P3-377 **Phosphorous Uptake via Am Fungi from Phytate in Organic Matter: Possible Involvement of Phytate Degrading Bacteria**
Shintaro Hara, Toshinori Shimizu, Toru Uno, Ryosuke Tajima, Toyoaki Ito and Masanori Saito*
Tohoku University, Japan

P3-378 **Rhizosphere Nitrification Inhibition by Australian Native Vegetation**
Ramya Thangarajan[1]*, Nanthi S Bolan[1], Ravi Naidu[1] and Julianne O'reilly-Wapstra[2]
[1] University of South Australia, Australia; [2] University of Tasmania, Australia

P3-379 **Effects of Clay Type, Rate and Placement on Nutrient Availability and Crop Productivity in Sandy Terrain of Southern Central Coastal Vietnam**
Truc T.T Do[1]*, Richard W. Bell[2] and Surender Mann[2]
[1] Institute of Agricultural Sciences for Southern Vietnam, Viet Nam; [2] Murdoch University, Australia

P3-380 **Synchronizing Crop Demand and Soil Supply Ensures High Nitrogen Use Efficiency**
Chunjian Li*, Peng Ning, Yunfeng Peng and Sa Li
China Agricultural University, China

P3-381 **Adaptive Strategy of Three Typical Plant Species Over Majella Massif (central Italy): Differences in Microbial Community and Nutrient Uptake**
Luisa Massaccesi[1]*, Alberto Agnelli[1], Giovanni Gigliotti[1], Stefania Cocco[2] and Giuseppe Corti[2]
[1] University of Perugia, Italy; [2] Polytechnic University of Marche, Italy

P3-382 **Response of Coffee Plantations to the Phosphate Fertilization**
Herminia Martinez*, Edson Saraiva, Julio Neves and Junia Clemente
Universidade Federal de Vicosa, Brazil

P3-383 **Effect of the Application of Compost, Compost-Derived Humic Substances and Vermicompost on Zn Extractability and Growth of Walnut Trees (juglans Regia) in An Alkaline Soil**
Mauricio Molina[1]*, Manuel Araya[2] and Rodrigo Ortega[1]
[1] Universidad Tecnica Federico Santa Maria, Chile ; [2] Magister en Gestion y Tecnologia Agricola USM, Chile

P3-384 **Phosphorus Acquisition by Maize and Cotton in Low Phosphorus Soil**
Meena Sadasivam*, Rajeswari Ramanathan and Malarvizhi Palaniappan
Tamil Nadu Agricultural University, India

P3-385 **Isolation of Putative Endophytic Bacteria from Selenium-Supplemented Wheat Plants and Their Potential Use for Biofortification and Biocontrol of a Soil Borne Pathogen**
Paola Duran[1], Jacquelinne Acuna[1], Milko Jorquera[1], Rosario Azcon[2], Cecilia Paredes[1] and Maria De La Luz Mora[1]
[1] Universidad de la Frontera, Chile; [2] Estacion Experimental del Zaidin (CSIC), Chile

P3-386 **Nitrate Leaching in Potato Rotation Field under the Influence of Manure Application in New Brunswick, Canada**
Sheng Li and Zisheng Xing
Agriculture and Agri-Food Canada, Canada

P3-387 **Challenges and Opportunities in Application of Nanotechnology in Enhancing Nutrient Use Efficiency-An Overview**
Kuldeep Singh*
Amity University Uttar Pradesh, India

P3-388 **P-Rich By-Products as Sources of Plant Available P - Comparison of Different Test Methods**
Kari Ylivainio[1]*, Johannes Jermakka[2] and Eila Turtola[1]
[1] MTT Agrifood Research Finland, Finland; [2] VTT Technical Research Centre of Finland, Finland

P3-389 **Crop Nitrogen Status Investigate Using a Digital Camera**
Yuan Wang and Dejian Wang*
Chinese Academy of Sciences, China

P3-390 **Plant Uptake of Phosphorus Recycled from Human Waste Water and Sewage Sludge Ashes**
Gregor Meyer[1]*, Simone Nanzer[1], Christophe Bonvin[1], Kai Udert[2], Bastian Etter[2], Paul Maeder[3], Cecile Thonar[3], Emmanuel Frossard[1] and Astrid Oberson[1]
[1] ETH Zurich, Switzerland; [2] Swiss Federal Institute of Aquatic Science and Technology, Switzerland; [3] FiBL, Switzerland

P3-391 **Contents of Total Iron and Different Iron Forms Distribution of Harran Plain, Southeast of Turkey**
Asuman Buyukkilic Yanardag[1]*, Ibrahim Halil Yanardag[1], Tuba Cinar Buyukkilic[2], Ali Seyrek[2], Ahmet Mermut[3] and Angel Faz Cano[1]
[1] Technical University of Cartagena, Spain; [2] Harran University, Turkey; [3] Saskatchewan University, Canada

P3-392 **The Dynamics of Competitive P Uptake by Intercropped Wheat and Fababean**
Chunjie Li*, Haigang Li and Fusuo Zhang
China Agricultural University, China

P3-393 **Morphological Responses of Grapevine Root to Copper Stress Given Different Calcium Nutritional Levels**
Pei-Yi Chen[1]*, Kai-Wei Juang[1], Bo-Ching Chen[2] and Yung-I Lee[3]
[1] National Chiayi University, Taiwan; [2] MingDao University, Taiwan; [3] National Museum of Natural Science, Taiwan

P3-394 **Isolation of Phytase-Producing Rhizobacteria from Extreme Environments**
Jacquelinne Acuna[1], Stefanie Gabler[2], Daniel Menezes-Blackburn[2], Ralf Greiner[2], Milko Jorquera[1] and Maria De La Luz Mora[1]
[1] Universidad de La Frontera, Chile; [2] Max Rubner-Institut Federal Research Institute of Nutrition and Food, Germany

P3-395 **Importance of Straw Residue Management for Silicon Supply to Rice Plants in Contrasting Southeast Asian Regions**
Thimo Klotzbuecher[1]*, Anika Marxen[2], Doris Vetterlein[2] and Reinhold Jahn[1]
[1] Martin-Luther-Universitat Halle-Wittenberg, Germany; [2]Helmholtz Centre for Environmental Research, Germany

P3-396 **The Potential of New Zealand Native Plants to Mitigate Nitrogen Transport from Agricultural Land**
Hannah Franklin, Nicholas Dickinson and Brett Robinson
Lincoln University, New Zealand

P3-397 **Urea Deep Placement for Paddy Rice: The Scientific Foundations**
Eric Craswell[1]*, Paul Vlek[2] and Upendra Singh[3]
[1] Australian National University, Australia; [2] University of Bonn, Germany; [3] IFDC-An International Center for Soil Fertility and Agricultural Development, USA

P3-398 **Modeling of Phyto-Extraction on Pot Experiments**
Francesco Lugli and Claudio Mahler*
Federal University of Rio de Janeiro, Brazil

P3-399 **Effects of Magnesium Contents on the Freundlich Adsorption Isotherm Constants and Phosphorus Availability in Agricultural Soils of Wallonia (Belgium)**
Florian Cobert*, Sophie Barbieux, Malorie Renneson and Gilles Colinet
Universite de Liege (GxABT), Belgium

P3-400 **Sorghum (sorghum Bicolor L) Response to Residual Ground Rock Phosphates in Legume-And Cereal-Based Crop Rotation Schemes on Two Contrasting Alfisols**
Ezekiel Akinkunmi Akinrinde*, Hamza Abdulmajeed and ' Tola Omolayo Olasunkanmi
University of Ibadan, Nigeria

P3-401 **Effects of Fertilization on Rice Grain Yield and Incidents of Pests and Diseases**
Fan Luo[1], Xue-Feng Hu[1]*, Qing Teng[1], Ming-Yang Cao[1] and Min-Yong Yang[2]
[1] Shanghai University, China; [2] Agricultural Technology Promotion Center of Jinze Town, China

P3-402 **Root-Zone Fertilization- A Case Study to Improve Nitrogen Use Efficiency of Rice (oryza Satival.)**
Xiao-Wei Liu, Zhao-Ming Chen, Huo-Yan Wang* and Jian-Min Zhou
University of Chinese Academy of Sciences, China

P3-403 **Effects of Citrate Addition into the Rhizosphere on P Acquisition Efficiency of Phosphatase Gene-Modified Plants and P Availability in the Soil**
Hayato Maruyama and Jun Wasai*
Hiroshima University, Japan

P3-404 **Boosting Smallholder Cowpea and Soil Productivity through Use of Green Input in the Guinea and Sudan Savannah Zones of Ghan**
Obianuju Emmanuel[1]*, E.Y Safo[1] and F.M Tetteh[2]
[1] Kwame Nkrumah University of Science and Technology, Ghana; [2] Soil Research Institute, Ghana

P3-405 **Managing Paddy Soils to Improve Zn Bioavailability and Agronomic Performance of Fine Grain Aromatic Rice**
Hafeez Ur Rehman, Faiz Rasool, Shahzad M A Basra and Abdul Wakeel
University of Agriculture, Pakistan

P3-406 **Accumulation of Major Nutrients in Calcareos Soils under Intensive Cultivation and Pressurized Irrigation Practices in Jordan**
Sayed Khattari*
The Jordan University-faculty of Agriculture, Jordan

P3-407 **Isolation of Phosphate Solubilizing Bacteria from Two Types of Calcareous Soil and Evaluating Their Ability to Solubilize Various Sources of Rock Phosphates**
Farshad Alishahi, Hossein Ali Alikhani*, Ahmad Heidari, Leila Mohammadi and Faiza Hossaini
University of Tehran, Iran

P3-408 **Soil Nutrient Dynamics and Maize Yield as Influenced by Integrated Nutrient Management**
Bello Wasiu and Alabi Adedamola
College of Agriculture- Oyo State College of Agriculture Igboora, Nigeria

P3-409 **Bioavailability of Manganese in Two Acid Latosols (oxisols) under Different Rate Covers**
Mario Miyazawa[1]*, Sarah Sasaki Jurkevicz[2] and Cezar Francisco Araujo-Junior[1]
[1] Agronomic Institute of Parana - IAPAR, Brazil; [2]Federal University Technology of Parana UTFPR, Brazil

P3-410 **Effect of Different Potassium Level on Growth and Fruit Yield of Camellia Oleifera Chang-Lin Series**
Lu You, Zhi Li, Dekui Niu*, Dongnan Hu*, Wenyuan Zhang, Xiaomin Guo and Deyue Meng
Jiangxi Agricultural University, China

P3-411 **Nutrient Contents in Various Purple Soils and Their Effects on Nutrient Distribution in Flue-Cured Tobacco in Jiangxi Province**
Xiangan Tang*, Zuzhang Li and Guangrong Liu
Jiangxi Academy of Agricultural Sciences, China

P3-412 **Effect of Molybdenum on Nitrogen Fixation and Rhizobial Diversity of Hairy Vetch (vicia Villosa Roth) in Korean Soil**
Faridul Alam, Tae Young Kim and Yong Bok Lee*
Gyeongsang National University, Korea

P3-413 **Enhancement of Phosphate and Zinc Solubilization by a Novel Plant Growth Promoting Bacteria Strain Gluconacetobacter Sp. In Soil Amended with Humic Acid**
Hak-Won Yoon[1], Min-Hui Son[1], Jae-Hwan Kim[1], Sung-Hee Seo[1], Hong-Joo Son[2] and Yoon-Seok Chang[1]*
[1] Pohang University of Science and Technology (POSTECH), Korea; [2] Pusan National University, Korea

P3-414 **Influence of Chelating Agents and Nitric Acid on the Growth of Cherry Tomato and Solubilization of Accumulated Phosphate in Soils**
Myung Sook Kim*, Yoo Hak Kim, Seong Soo Kang, Myung Suk Kong, Chang Hoon Lee, Taek Keun Oh and Deog Bae Lee
RDA, Korea

P3-415 **Biomass Production in Pure and Mixed Barley-Hairy Vetch Green Manure and its Effects on Rice Production**
Tae Young Kim, Faridul Alam, Song Yeob Kim and Yong Bok Lee*
Gyeongsang National University, Korea

C3.3-3: Ecological Significance of Soil Organic Phosphorus

P3-416 **Contributions of Manures to Soil Phosphorus Fractions and Their Relationship with Maize Dry Matter Yield and P Uptake in Two Tropical Soils**
Jamiu Azeez* and Ololade Olurunke
Federal University of Agriculture, Nigeria

P3-417 **Experimental Assessment of Phosphorus from Bounded Runoff Plots under Natural Rainfall as Affected by the Application of Manures**
Ini Edem and Uduak Udoinyang
University of Uyo, Nigeria

P3-418 **Development of an Alternative to the Olsen Test for Determining Corn Plant-Available Phosphorus in Calcareous Soils**
Adel Reyhanitabar*, Mohammad Reza Maqsoodi and Nosrat Allah Najafi
University of Tabriz, Iran

P3-419 **Effects of Different Fertilizer Treatments on Nutrient (phosphorus) Release Pattern in an Ultisol of Anyigba, Kogi State**
Amhakhian Sunday and Abuh S.S
Kogi State University, Nigeria

P3-420 **Soil Organic Phosphorus Transformations along a Coastal Dune Chronosequence under New Zealand Temperate Rain Forest**
Leo Condron[1] and Benjamin Turner[2]
[1] Lincoln University, New Zealand; [2] Smithsonian Tropical Reserach Institute, Panama

P3-421 **Changes in P Pools over Three Months in Two Soils Amended with Legume Residues**
Md. Alamgir[1]* and Petra Marschner[2]
[1] University of Chittagong, Bangladesh; [2] University of Adelaide, Australia

P3-422 **Zinc Requirement for Optimum Grain Yield and Zinc Concentration Depends on Phosphorus Application to Wheat Cultivars**
Waqas Khan and Tariq Aziz
University of Agriculture, Pakistan

P3-423 **Study on Phosphorus Leaching Risk and Quantitative Assessment of Cultivated Soils in Subtropical Area of China**
Li Yuyuan*, Wu Jinshui, Gao Ru, Wang Yi, Li Yong and Zhang Manyi
Chinese Academy of Sciences, China

P3-424 **Plant Species Richness but Not Management Affects Microbial Phosphorus Concentrations in Grassland and Forest Soils**
Elisabeth Sorkau[1]*, Michael Bonkowski[2], Ellen Kandeler[3], Sven Marhan[3], Jan Weinert[2] and Yvonne Oelmann[1]
[1] Eberhard Karls University Tuebingen, Germany; [2] University Cologne, Germany; [3] University of Hohenheim, Germany

P3-425 **Predicting Soil Organic Phosphorus Using Near-Infrared Reflectance Spectroscopy**
Dalel Abdi[1]*, Barbara J. Cade-Menun[2], Noura Ziadi[2], Gaetan F. Tremblay[2] and Leon-Etienne Parent[1]
[1] Soil and Agri-food Engeneering, Universite Laval, Canada; [2] Agriculture and Agri-food Canada, Canada

P3-426 **Unbiased Statistical Analysis of Soil P Forms Determined by 31p-Nmr Spectroscopy**
Dalel Abdi[1]*, Barbara J. Cade-Menun[2], Noura Ziadi2 and Leon-Etienne Parent[1]
[1] Universite Laval, Canada; [2] Agriculture and Agri-food Canada, Canada

P3-427 **Phosphorus Availability in an Organically Amended Vegetable Soil**
Nor Ashikin Ahmad[1], Hossein Ghadiri[1]*, Chengrong Chen[1]* and Simon Eldridge[2]*
[1] Griffith University, Australia; [2] Centre for Recycled Organics in Agriculture, Australia

P3-428 **Applicability and Limitations of Enzyme Addition Assays for the Characterisation of Soil Organic Phosphorus across a Range of Soil Types**
Klaus Jarosch[1]*, Ashlea Doolette[2], Ronald Smernik[2], Emmanue[1] Frossard[1] and Else K. Buenemann[1]
[1] ETH Zurich, Switzerland; [2] University of Adelaide, Australia

P3-429 **A Comparison of Phosphorus Characterization in Animal Manure by Conventional Procedures and Solution Phosphorus-31 Nuclear Magnetic Resonance Spectroscopy**
Guohua Li, Haigang Li* and Fusuo Zhang
China Agricultural University, China

P3-430 **What Effect Does Pig Waste Have on Microbes Involved in the Phosphorus Cycle in Soil?**
Anjani Weerasekara*, Lynette Abbott, Sasha Jenkins, Ian Waite, Bede Mickan and Anthony O'donnell
University of Western Australia, Australia

P3-431 **Soil Organic Phosphorus in Critical and Non-Critical Hydrological Source Areas**
Ying Wang, Ben Surridge and Phil Haygarth*
Lancaster University, United Kingdom

P3-432 **Phosphorus Losses from Tile Drained Agricultural Lands in Canada, an Overview**
T.Q. Zhang*, C.S. Tan, Craig Drury and Tom Welacky
Agriculture & Agri-Food Canada, Canada

P3-433 **Unravelling Microbial P Cycling in Soils Receiving Organic P Fertiliser Inputs**
Sasha Jenkins[1], Ian Waite[1], Tony Craddock[2] and Anthony O'donnell[1]
[1] The University of Western Australia, Australia; [2] Rural Directions, Australia

P3-434 **Organic Phosphorus Contribution and Chemical Characterization of Residual Fraction Derived from Hedley Fractionation in Andisol**
Gabriela Velasquez[1], Yonathan Redel[1], Patricia Poblete[1], Cornelia Rumpel[2], Benjamin Turner[3] and Maria De La Luz Mora[1]*
[1] Universidad de La Frontera, Chile; [2] UMR Universite Paris VI et XII-CNRS-INRA-IRD), France; [3] Smithsonian Tropical Research Institute, Panama

P3-435 **Assesment of the Aluminium, Iron and Silicium Role on Phosphorus Fractions in Grasslands Andisols**
Yonathan Redel*, Paula Cartes, Gabriela Velazquez, Patricia Poblete and Maria De La Luz Mora
Universidad de La Frontera, Chile

P3-436 **Microbial Mobilization of Inorganic P is a Key Process to Promote P Availability in Highly-Weathered Soils**
Jinshui Wu
The Chinese Academy of Sciences (CAS), China

P3-437 **Edaphic Phosphate Mineralization Mediated by Rhizobacterial Organic Acids**
David Espinosa-Victoria* and Marianela Paredes Mendoza
Colegio de Postgraduados, Mexico

P3-438 **What are the Major Forms of Organic P in Vertisols?**
Timothy Mclaren[1]*, Ronald Smernik[1], Chris Guppy[2], Mike Bell[3] and Matthew Tighe[2]
[1] The University of Adelaide, Australia; [2] University of New England, Australia; [3] University of Queensland, Australia

P3-439 **Shifts in Soil Organic Phosphorus Composition and Phosphatase Activities in Response to Conversion of the Native Forest to the Plantation Forest**
Chengrong Chen and Sue E Boyd
Griffith University, Australia

P3-440 **Comparing Phosphorus Mineralization from Decomposing Plant Materials Incorporated into Savanna and Forest Soils of Ghana**
Francis Tetteh[1]*, Ebenezer Safo[2] and Charles Quansah[2]
[1] CSIR-Soil Research Institute, Ghana; [2] Kwame Nkrumah University of Science and Technology, Ghana

P3-441 **Adsorption and Precipitation of Myo-Inositol Hexaphosphate on Amorphous Aluminum Hydroxide**
Yupeng Yan, Fan Liu, Wenfeng Tan, Guohong Qiu, Mingming Liu and Xionghan Feng*
Huazhong Agricultural University, China

P3-442 **Overcoming Phosphorus Deficiency in Soil by Using Municipal Waste Compost Enriched with Rock Phosphate and PSB**
T. Iqbal, G. Jilani, T. Sidique and A. N. Chaudhry
PMAS-Arid Agriculture University Rawalpindi

P3-443 **Effect of Phosphorus Fertilizer Fortified with Molybdenum on Nitrogen Fixation in Cowpea (vigna Unguiculata (l.) Walp.) in the Northern Guinea Savanna of Nigeria**
Ambrose Amba*, A. Garba, S. Mustapha, A.S. Fagam, U. L Muhammad and T. Sunday Muhammad
Abubakar Tafawa Balewa University, Nigeria

P3-444 **Impact of Manure, Straw and Nitrogen Application on Phosphorus Fractionation in Soil and Leachate in Greenhouse Vegetable Field**
Yan Zhengjuan[1], Chen Shuo[1], Li Chao[2], Li Junliang[2] and Chen Qing[1]*
[1] China Agricultural University, China; [2] Qingdao Agricultural University, China

P3-445 **Radiation Crosslinking of CMC-NA/PVP Composite Hydrogel and its Application as a Fertilizer for the Recovery of Nutrient Ions from Livestock Wastewater**
Jun Young Kim, Hee-Sung Kwak, Tak-Hyun Kim*, Seung-Joo Lim, In-Hwan Shin and Youn-Mook Lim
Korea Atomic Energy Research Institute, Korea

P3-446 **The Soil Environment Factor Affecting Vegetation-Diversity at Pond Wetland in Agricultural Landscape, Korea**
Banghun Kang[1], Donghyun Kang[1], Namchoon Kim[2], Minjae Kong[1] and Jinkwan Son[1]*
[1] Rural Development Administration, Korea; [2] Dankook University, Korea

P3-447 **Conservation Agriculture for Enhancing Resource Use Efficiency, Carbon Sequestration, Soil and Crop Productivity**
Umakanta Behera[1] and A R Sharma[2]
[1] Indian Agricultural Research Institute, India; [2] Directorate of Weed Science Research, India

P3-448 **Effects of Rice Straw Managements with Fertilizer Types on Enhancing Growth, Yield and Carbon Stock in Rice**
Suphachai Amkha, Bangon Ubon, Supapan Tangjai and Thongchai Mala*
Kasetsart University, Thailand

C3.5-3: Management and Reclamation of Mining Site Soils

Soil Art *Featured artist: Mathias Kessler, USA and Austria, www.mathiaskessler.com/from-copernicus-to-cyberspace/index.html*

P3-449 **General Characteristic of Soils in Ecologically Vulnerable Mining Areas around Kajaran Town in Armenia**
Karen Ghazaryan[1], Hasmik Movsesyan[1], Naira Ghazaryan[2], Gor Gevorgyan[3] and Karlen Grigoryan[1]
[1] Yerevan State University, Republic of Armenia; [2] Ministry of Education and Science, Republic of Armenia; [3] National Academy of Sciences of the Republic of Armenia, Armenia

P3-450 **The Role of Reclamation Research in Re-Establishing Functional Ecosystems in the Oil Sands Region of Northeastern Alberta**
Carmela Arevalo, Suncor Energy Inc, Canada

P3-451 **Soil and Mining Problem in the Kyrgyzstan**
Bekmamat Djenbaev*, Kaldibaev B.K* and Zholbolduev B.T
Institute Biology & Pedology of National Academy of Sciences Kyrgyz Republic, Kyrayzstan

P3-452 **Reclamation Cover System Design Based on Environmental Impact Evaluation due to Phosphate Mining Activities**
Xin Song, Chinese Academy of Sciences, China

P3-453 **Monitoring of Soils in Ecologically Vulnerable Mining Areas around Shamlnogh Town in Armenia**
Karen Ghazaryan, Natela Gevorgyan and Sergey Avetisyan
Yerevan State University, Armenia

P3-454 **Trace Metal Concentrations in Schoolyard Soils; Talcahuano, Chile**
Pedro Tume[1]*, Elizabeth Gonzalez[1], Robert King[1], Guillermo Bustamante[1] and Jaume Bech[2]
[1] Universidad Catolica de la Santisima Concepcion, Chile; [2] University of Barcelona, Spain

P3-455 **Mineralogy Characteristics of the Soils in the Site Stockpiled by Chromite Ore Process Residue (corp) and its Decontamination by Ex-Situ Washing**
Haibo Zhang, Xinhua Liu, Lei Zhang, Longhua Wu and Yongming Luo*, Chinese Academy of Sciences, China

P3-456 **Development of Microbial Community Diversity during Remediation of Alkaline, Saline Tailings: Towards Improved Remediation Strategies**
Talitha Santini[1]* and Lesley Warren[2]
[1] The University of Queensland, Australia; [2] McMaster University, Canada

P3-457 **Lead Accumulation in Native Plants Growing on Mining Soils of Peruvian Andes**
Jaume Bech[1], Nuria Roca[2]*, Rafael Boluda[3], Pedro Tume[4], Paola Duran[5], Wilfredo Poma[6] and Isidoro Sanchez[6]
[1] Universitat de Barcelona, Spain; [2] Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina; [3] Universitat de Valencia, Spain; [4] Universidad Catolica de la Santisima Concepcion, Chile; [5] Universidad de la Frontera, Chile; [6] Universidad Nacional de Cajamarca, Peru

P3-458 **Heavy Metal Extraction by Spontaneous Plants Growing on Multi-Metal Contaminated Site in South Brazil**
Cacio Boechat, Vitor Pistoia, Clesio Gianello and Flavio Camargo*
UFRGS, Brazil

P3-459 **Leaching of Nutrients and Plant Growth in Bauxite Residue Sand after Addition of Amendments**
Richard Haynes[1]*, Benjamin Jones[1] and Ian Phillips[2]
[1] The University of Queensland/CRC CARE, Australia; [2] Alcoa of Australia, Australia

P3-460 **Characterization of Soils in Wetlands of the Lower Basin Babahoyo River (Ecuador)**
Wilson Pozo[1], Gloria Carrera[2], Francisco Pardo[3]*, Teofilo Sanfeliu[3], Manuel Miguel Jordan[4], Ana Belen Vicente[3] and Jaume Bech[5]
[1] University of Guayaquil, Ecuador; [2] Instituto Nacional de Investigaciones Agropecuarias, Ecuador; [3] Jaume I University, Spain; [4] Miguel Hernandez University, Spain; [5] University of Barcelona, Spain

P3-461 **Spatial and Temporal Variability of Salinity Soil in Rice Wetlands of the Lower Guayas Basin (Ecuador)**
Wilson Pozo[1], Gloria Carrera[2], Francisco Pardo[3]*, Ana Belen Vicente[3], Teofilo Sanfeliu[3], Manuel Miguel Jordan[4] and Jaume Bech[5]
[1] University of Guayaquil, Ecuador; [2] Instituto Nacional de Investigaciones Agropecuarias, Ecuador; [3] Jaume I University, Spain; [4] Miguel Hernandez University, Spain; [5] University of Barcelona, Spain

P3-462 **Using Landform Evolution Models to Assess the Erosional Stability of Waste Encapsulation Structures at the Millennial Timescale**
Garry Willgoose* and Gregory Hancock
The University of Newcastle, Australia

P3-463 **The Fluvial Transport of Lead (pb) from an Orebody in an Arid Australian Landscape**
Stephen Cattle*, Angus Lees and Kai Yang
The University of Sydney, Australia

P3-464 **Geochemistry of Heavy Metals in Soils of Mineralized and Non-Mineralized Areas, Western Thailand**
Pichamon Intamo[1], Anchalee Suddhiprakarn[1]*, IRB Kheoruenromne[1], Saowanuch Tawornpruek[1] and Robert J. Gilkes[2]
[1] Kasetsart University, Thailand; [2] University of Western Australia, Australia

P3-465 **Effect of Amendments and Microorganisms Application in the Evolution of Spontaneous Plant Colonization in Tailing Ponds**
Jose A. Acosta*, Angel Faz, Sebla Kabas, Raul Zornoza and Silvia Martinez-Martinez
Universidad Politecnica de Cartagena, Spain

P3-466 **Assessment of Heavy Metal Contamination of Soils and Water Properties in and around Open Cast Mines of Enyigba Area, Ebonyi State, Nigeria and the Implication for Landuse Management**
Chukwuebuka Okolo*, Franklin Akamigbo, Peter Ezeaku and Jude Ene
University of Nigeria, Nigeria

P3-467 **Quantifying the Wind Speed Amplification Effect on Tailings Storage Facilities**
Douw Bodenstein[1]*, Piet Van Deventer[1], Stuart Piketh[1] and Fanus Van Wyk[2]
[1] North-West University, South Africa; [2] Agreenco Environmental Services, South Africa

P3-468 **Inter-Populational Variation on the Accumulation of Hazardous Elements and Nutrients in Cistus Monspeliensis L. Growing in Portuguese Iberian Pyrite Belt Mine Areas**
Maria Manuela Abreu[1]*, Erika Santos[2], Maria Clara F. Magalhaes[3] and Eliana Fernandes[4]
[1] Universidade de Lisboa, Unidade de Investigacao de Quimica Ambiental, Portugal; [2] Universidade de Lisboa, Portugal; [3] Universidade de Aveiro, Portugal; [4] Instituto Superior Dom Afonso III, Portugal

P3-469 **Content of Potentially Toxic Elements in Dumpsite Soils after Brown Coal Mining as Affected by the Reclamation Method**
Lubos Boruvka*, Josef Kozak, Karel Nemecek, Antonin Nikodem, Martin Kocarek, Vaclav Tejnecky, Christopher Ash and Ondrej Drabek
Czech University of Life Sciences Prague, Czech Republic

P3-470 **Comparative Restoration Potential and Soil Carbon Sequestration Efficiency of Certain Indigenous and Exotic Woody Species Planted on Coal Mine Habitats in a Dry Tropical Environment, India**
Anand Narain Singh*
Panjab University Chandigarh, India

P3-471 **Smectite Formation in Mine Tail Soils Affects Macroporosity, Hydrological Properties, and Pollutants Flow**
Jose Penas[1], Gregorio Garcia[1], Sergio Pellegrini[2], Nadia Vignozzi[2] and Edoardo Costantini[2]*
[1] Universidad Politecnica de Cartagena, Spain; [2] CRA-ABP, Italy

P3-472 **The Potential and Risks of Biosolids Application in Opencast Mine Restoration**
Stephane Boyer*, Benjamin Waterhouse, Karen Adair and Stephen D. Wratten
Lincoln University, New Zealand

P3-473 **Geochemical Mapping of Polluted Soils and Environmental Risk Assessment: A Comparison Case Study in the Province of Huelva (spain) and the Zambales Mountain Range (luzon Island, the Philippines)**
Maria Clara Zuluaga[1]*, Stefano Albanese[1], Benedetto De Vivo[1], Jose Miguel Nieto[2], Alfredo Mahar Francisco Lagmay[3] and Gianluca Norini[4]
[1] Universita Degli Studi di Napoli, Federico II, Italy; [2] Universidad de Huelva, Spain; [3] University of the Philipines, Philippines; [4] Consiglio Nazionale Delle Ricerche, Italy

P3-474 **General Characteristics of Organic Matter in Reclaimed Soils**
Maria Sokolovska[1]*, Miglena Zhiyanski[1], Evguenia Slavtcheva[2], Nuria Roca[3] and Jaume Bech[4]
[1] Forest Research Institute, Bulgaria; [2] State Fund "Agriculture", Bulgaria; [3] Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina; [4] University of Barcelona, Spain

P3-475 **Speciation and Bioavailability of Metals and Metalloids in Managing Health Risks of Mine Wastes for Rehabilitation**
Barry Noller[1]*, Jack C Ng[1], Violet Diacomanolis[1], Raijeli Taga[1], Hugh H. Harris[2], Jiajia Zheng[1] and Trang Huynh[1]
[1] The University of Queensland, Australia; [2]The University of Adelaide, Australia

P3-476 **Plant Microbe Associations for Reclamation of Oil Sand Mining Sites in Canada**
Eduardo Mitter, Renato De Freitas and Jim Germida*
University of Saskatchewan, Canada

P3-477 **Characterization of Soils around an Old Abandoned Smelter at Jang Hang, Korea**
Choong Hyun Lee, Seon Yong Lee, Youngjae Kim and Young Jae Lee*
Korea University, Korea

C3.6-2: Salinity Management When Irrigating with Marginal Quality Waters

P3-478 **Soil Water Retention and Water Use Efficiency of Cotton under Plastic Mulched Drip Irrigation in Soils of Different Salinities in the Tarim River Basin**
Xiaoning Zhao[1]*, Theresa Schiller[1], Karl Stahr[1], Hussein Othmanli[1], Chenyi Zhao[2], Yu Sheng[2] and Shamaila Zia[1]
[1] Hohenheim University, Germany; [2] CAS, China

P3-479 **Modeling Sorghum Response to Irrigation Water Salinity at Early Growth Stage**
Saeed Saadat[1] and Mehdi Homaee[2]*
[1] Soil and Water Research Institute(SWRI), Iran; [2] Tarbiat Modares University (TMU), Iran

P3-480 **Interactive Effects of Nacl Salinity and Waterlogging on Availability of Copper, Iron, Manganese and Zinc in Two Different Soils**
Nosratollah Najafi
University of Tabriz, Iran

P3-481 **Impact Study on the Application of Vinasse to Cambisol and Vertic Luvisol in Ethiopia**
Frederic Feder[1]* and Julie Sansoulet[2]
[1] CIRAD,UPR, Senegal; [2] CNRS et Universite Laval, Canada

P3-482 **Effect of Drip Irrigation on Corn (zea Mays) Growth in Reclaimed Tidal Saline Soil**
Sanghun Lee*, Hui-Soo Bae, Soo-Hwan Lee, Jong-Gook Kang, Seon-A Hwang, Yang-Yeol Oh, Hong-Kyu Kim and Kyeong-Bo Lee
RDA, Korea

C4.4-1: Education and Social Awareness for Soil Science in General Public

Soil Art *Featured artist: Tattfoo Tan, Sustainable Organic Stewardship, USA, www.tattfoo.com/sos/SOSBlackGold.html*

P3-483 **Peak Soil- Exploring Relationships between Soil Quality and the Nutritional Density of Crops**
Gary Pierzynski
Kansas State University, USA

P3-484 **Experiences with Developing and Implementing Watershed Scale Projects to Improve Water Quality in East Tennessee, USA**
Forbes Walker*
University of Tennessee, USA

P3-485 **Exploring Relevance of Agro Input Dealers in Dissemination and Communication of Soil Fertility Management Knowledge: The Case of Siaya and Trans Nzoia Counties, Kenya**
Tiberious Etyang[1]*, Shamie Zingore[2], Ann Mugure[3], Boaz Waswa[4] and Frankline Mairura[4]
[1] University of Nairobi, Kenya; [2] International Plant Nutrition Institute (IPNI), Kenya; [3] Alliance for Green Revolution in Africa (AGRA), Kenya; [4] International Centre for Tropical Agriculture (CIAT), Kenya

P3-486 **Soil Zinc Deficiency and its Impact on Human Health in India: An Overview**
Kuldeep Singh*
Amity University Uttar Pradesh, India

P3-487 **Education and Social Awareness in the City of Sao Paulo-Brazil**
Deborah De Oliveira
University of Sao Paulo, Brazil

P3-488 **"Library of Rocks": An Important Tool for the Learning of Soils**
Fabio Carvalho Nunes[1], Enio Fraga Da Silva[2], Rute Dos Santos Guimaraes[1], Vanessa Souza Rotondano[1], Vanessa Teixeira De Matos[1], Angela Andrade Calhau[1] and Sebastiao Barreiros Calderano[2]
[1] Instituto Federal Baiano, Brazil; [2] Embrapa Solos, Brazil

P3-489 **Process for Soils Museum Preparation**
Somsak Sukchan
MOAC, Thailand

P3-490 **Behavior of Farmers under Climate Change in Eastern Algeria**
Miloud Hafsi and Amar Rouabhi
The University of Setif, Algeria

P3-491 **Interactive Extension Techniques Effectively Engage Audiences Regarding Agriculture and Water Quality in Manitoba, Canada**
Mitchell Timmerman
Manitoba Agriculture, Food and Rural Development, Canada

P3-492 **Understanding Soils: Inspiring the New Generation towards Agricultural and Environmental Sustainability. A Workshop for School Students in Oman**
Said Al-Ismaily* and Ali Al-Maktoumi
Sultan Qaboos University, Oman

P3-493 **Improving Soils Knowledge through an Intelligent Platform for Knowledge Transfer and Data Management in Agriculture**
John Bennett*
University of Southern Queensland, Australia

P3-494 **Influencers of Food Security and Food Dietary Diversity in Rural Semi - Arid Communities**
Roger Maxi Ddungu
Rural-Urban Environmental Agency (RUEA), Uganda

P3-495 **Reconnecting the Public with Soils and Agriculture in Manitoba, Canada is Achieved through the Use of Interactive Extension Techniques**
Mitchell Timmerman
Manitoba Agriculture, Food and Rural Development, Canada

P3-496 **Appy Days in Communicating Soil Science**
Claire Harris and Mike Grundy
CSIRO Sustainable Agriculture Flagship, Australia

P3-497 **Educational Program with Agricultural Practice and Sensor Data Analysis for Primary School Students in Tokyo-Dr. Doroemon Project**
Hanae Yokokawa and Masaru Mizoguchi
University of Tokyo, Japan

P3-498 **Open Society and Soil Inventory**
Toshiaki Ohkura
National Institute for Agro-Environmental Sciences, Japan

P3-499 **Interactive Soil Map of Russia**
Sergey Khokhlov[1], Maria Gerasimova[2], Dmitry Konyushkov[1] and Maria Bogdanova[2]
[1] V.V. Dokuchaev Soil Science Institute, Russia; [2] Moscow State University, Russia

P3-500 **Creating Awareness on Importance and Management of Soil by Rural Farmers in Nigeria: Role of Naerls Adopted Villages Project**
Bashir Sani*, Yusuf Abdullahi, Aliyu Ammani, Hajara Ahmadu, Adamu Yakubu and Ismail Ibrahim
Ahmadu Bello University, Nigeria

P3-501 **Presenting an International Educational Poster on World Soil Distribution**
Jonathan Gray[1]*, Jozef Deckers[2], Brian Murphy[1] and Stefaan Dondeyne[2]
[1] NSW Office of Environment and Heritage, Australia; [2] Catholic University of Leuven, Belgium

P3-502 **Colours of the Earth**
Meinhard Breiling*
BIENE - Soil and Bioenergy Network in Europe, Austria

P3-503 **Soil Atlas of Latin America: An Innovative Tool for Policy Development and Awareness Raising**
Ciro Gardi[1]*, Arwyn Jones[1]*, Luca Montanarella[1]*, Ronald Vargas[2]* and Carlos Cruz[3]*
[1] JRC. Join Research Centre. European Commission., Italy; [2] Soils, Food and Agriculture Organization of the United Nations, Italy; [3] INEGI, Mexico

P3-504 **Generating Interest in Soil Science through Collegiate Soils Contests**
Chris Baxter[1]* and Joseph Valentine[2]
[1] University of Wisconsin-Platteville, USA; [2] Delaware Valley College, USA

P3-505 **Soil Scientists Communicate Research Findings during Annual Field Days: Best Practices for Public Presentations**
Ann D. Jabro[1]* and Jalal D. Jabro[2]
[1] Robert Morris University, USA; [2] ARS-U.S.D.A., USA

P3-506 **Instruments to Raise Soil Awareness in Schools and Support National Soil Protection**
Sigbert Huber[1]*, B. Birli[1], M. Tulipan[1], G. Prokop[1] and A. Baumgarten[2]
[1] Environment Agency Austria, Austria; [2] Austrian Agency for Health and Food Safety, Austria

C4.4-2: Widening the Soil Science Course to the Various Directions of Scientific and Humanistic Area

Soil Art *Featured artist: Claire Pentecost, School of the Art Institute of Chicago, USA, www.publicamateur.org*

P3-507 **Learning Soil Classification through Virtual Learning Environment**
Nuria Roca*
Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina

P3-508 **Soil Judging as an Instrument for Community-Building in the Discipline of Soil Science**
Stephen Cattle[1]*, Cristine Morgan[2], Maxine Levin[3] and Kye-Hoon Kim[4]
[1] The University of Sydney, Australia; [2] Texas A&M University, USA; [3] United States Department of Agriculture, USA; [4] The University of Seoul, Korea

P3-509 **The Value of Soil Science Information and Opportunities for Informing Policy Decisions**
Sheryl Kunickis*
USDA, USA

P3-510 **Introducing Soil and Plant Science: Undergraduates Learning through Experiences**
Cristine Morgan[1] and Damien J Field[2]
[1] Texas A&M University, USA; [2] Univeristy of Sydney, Austria

P3-511 **Terragenome-The Soil Metagenome Network**
David Myrold[1]*, Mark Bailey[2], Janet Jansson[3], Folker Meyer[4], James Tiedje[5], Eric Triplett[6] and Timothy Vogel[7]
[1] Oregon State University, USA; [2] Centre for Ecology & Hydrology, United Kingdom; [3] Lawrence Berkeley National Laboratory, USA; [4] Argonne National Laboratory, USA; [5] Michigan State University, USA; [6] University of Florida, USA; [7] Universite de Lyon, France

P3-512 **Alternatives for Mushroom Cultivation Casing Soil**
Saloomeh Seyedalikhani[1]* and Saeed Massiha[2]
[1] Member of Karaj Young Researchers Club, Iran; [2] Justified of Assistant Professor of Elmi Karbordi University, Javanshir Branch, Iran

P3-513 **Technical Soil Science Research Results in the Poster Format: Best Practices for Effective Communication**
Ann D. Jabro[1]* and Jalal D. Jabro[2]
[1] Robert Morris University, USA; [2] ARS-U.S.D.A., USA

P3-514 **Soil Science in Religion, Arts, Society and History**
Hee-Myong Ro
Seoul National University, Korea

WG1: Soil Monitoring for Mankind and Environment Safety

P3-515 **Creating Surface Soil Texture Map with Indicator Kriging Technique: A Case Study of Central Iran Soils**
Khaled Zaeri[1]*, Norair Toomanian[2] and Sadegh Hazbavi[3]
[1] Hvyzeh Municipality , Hovyzeh , Khuzestan , Iran; [2] Isfahan Agricultural And Natural Resources Research Center, Amireh Town, Iran; [3] Ahwaz Municipality, Iran

P3-516 **Regional Evaluation of Potential Landslide Earthquake and Wave Vibration Effect Based Relative Method (REM) and Geotechnical Mapping**
Bayu Nugraha*
Faculty of Geological Engineering, Indonesia

P3-517 **Development of Land Use and Land Cover Areas of Nanggroe Aceh Darussalam Province around 10 Years after the Tsunami Disaster**
Nisa Latifa*, Tatu Rizkia and Richardo Sihotang
Soil Science, Bogor Agriculture University, Indonesia

P3-518 **Land Degradation in the Philippines Based on the Fao-Lada Land Use System Approach**
Rodelio Carating
Bureau of Soils and Water Management, Philippines

P3-519 **Classification and Distribution of Iraqi Soils**
Ahmad Muhaimeed[1], Kasim Saliem[2] and Ahmad Muhaimeed[3]*
[1] Baghdad University, Iraq; [2] Soil, Ministry of Agriculture, Iraq; [3] Baghdad University, Iraq

P3-520 **Long-Term of the Consecutively Monocultured Peanut Obviously Alters the Community Composition of Soil Nematodes in the Red Soil Region of Southern China**
Xiao-Gang Li and Xing-Xiang Wang*
Chinese Academy of Sciences, China

P3-521 **Haiti Pilot Soil Survey Initiative**
Thomas Reinsch*, Charles Kome, Paul Reich, Shawn Mcvey, Zamir Libohova and Tom D'avello
Natural Resources Conservation Service, USA

P3-522 **Assessment of Soil Losses from Managed and Unmanaged Sites in A Subcatchment of Rawal Dam, Pakistan Using Fallout Radionuclides**
Muhammad Rafiq[1]*, Manzoor Ahmad[2], Naveed Iqbal[1] and Naseer Ahmad[3]
[1] Pinstech, Pakistan; [2] Iaea, Austria; [3] University of Punjab, Pakistan

P3-523 **Effects of Humic Acid in Remediation of Heavy Metals (pb And Cd) with Canola Plants (Brassica Napus L.)**
Aslıhan Esringu[1]*, Metin Turan[2], Melek Ekinci1 and Sezai Ercisli[1]
[1] Ataturk University, Turkey; [2] Yeditepe University, Turkey

P3-524 **Soil Properties Prediction of the Main National Italian Soil Typologies by Means of Mid-Infrared Diffuse Reflectance Spectroscopy**
Luigi P. D'acqui[1]*, Aessandra Bonetti[1], Simone Priori[2], Giovanni L'abate[2] and Edoardo A.c. Costantini[2]
[1]Consiglio Nazionale Delle Ricerche - CNR, Italy; [2] Consiglio per la Ricerca e la Sperimentazione in Agricoltura - CRA, Italy

P3-525 **Map Scale Effects on Soil Phosphorus Storage Estimation in the Uplands of Eastern China**
Liming Zhang[1], Jiajia Li[1], Dongsheng Yu[2]*, Xuezheng Shi[2], Shihe Xing[1], Shengxiang Xu[2], Yongcun Zhao[2] and Fengyun Zhang[3]
[1] Fujian Agriculture and Forestry University, China; [2] Chinese Academy of Sciences, China; [3] Heze University, China

P3-526 *(Moved to O65-6)* **Interpretation of Vegetation and Topographic Features Related to Soil Types in Amazon Forest: Comparison of Two Watersheds by the Use of Remote Sensing Data and Gis**
Osvaldo Jose Ribeiro Pereira[1], Celia Regina Montes[1]*, Yves Lucas[2]* and Adolpho Jose Melfi[1]*
[1]Universidade de Sao Paulo, Brazil; [2]Universite du Sud Toulon-Var, France

P3-527 **Space-Time Digital Mapping of Gypsum Horizons Micromorphotipes in Arid Region (Piedmont Plain of Turkestan Ridge (Uzbekistan) as Example)**
Dmitrii Golovanov[1] and Irina Yamnova[2]
[1] Geographical Faculty of Lomonosov Moscow State University, Russia; [2] Dokuchayev Soil Science Institute, Russia

P3-528 **Efficiency of Sulfur Application on Soybean in Two Types of Oxisols in Southern Brazil**
Adonis Moreira[1]*, Gedi Sfredo[1], Larissa Moraes[1] and Nand Fageria[1]
[1] Embrapa Soybean, Brazil; [2] Embrapa Rice and Bean, Brazil

P3-529 **Comparison of Sample Preparation Methods for the Fluoride in Soil Material**
Hyoung Seop Kim, Jeong Ki Yoon, Ji In Kim, Tae Seung Kim* and Hyung Wook Ko
National Institute of Environmental Research, Korea

WG2: WRB-Lessons Learned from the Development of the Third Edition 2014

P3-530 **Update of the Wrb Soil Classes in the 250k Soil Database of Finland: Expression of Soil Moisture Regime in Mineral Soils**
Markku Yli-Halla[1]* and Age Nyborg[2]
[1]University of Helsinki, Finland; [2] Norwegian Forest and Landscape Institute, Norway

P3-531 **Converting Legacy Soil Map of Turkey into the World Reference Base (WRB) tor Soil Resources- Case Study: Gaziantep, Turkey**
Hakki Emrah Erdogan, Mehmet Sahin, Yuksel Sahin and Sebahattin Keskin
General Directorate of Agrarian Reform (GDAR), Turkey

P3-532 **Specific Features of Pedogenesis in Thermokarst Depressions (alases) of the Permafrost Zone and the Place of Alas Soils in the World Reference Base for Soil Resources**
Roman Desyatkin* and A.R. Desyatkin
Institute for Biological Problems of Cryolithozone SB RAS, Russia

P3-533 **World Distribution of WRB Reference Soil Groups presented on New Educational Poster**
Jonathan Gray*, Jozef Deckers, Brian Murphy and Stefaan Dondeyne
NSW Office of Environment and Heritage, Australia

P3-534 **Estimates of the Rates and Processes of Development of Texture Profiles in Some Australian Soils - Implications for the Definition of an Agric Horizon**
Brian Murphy*
Office of Environment and Heritage, Australia

P3-535 **New Qualifier in Wrb Based on Brazilian Soils with High Iron Contents**
Lucia Helena Anjos[1]*, A. Samuel-Rosa[2] and P. Schad[3]
[1] UFRRJ, Brazil; [2] Federal Rural University of Rio de Janeiro, Brazil; [3] Technische Universitaet Muenchen, Germany

P3-536 **Genesis and Variability of Anthrosols in the Campine Area of Belgium**
Karen Vancampenhout[1]*, Stefaan Dondeyne[1], Jan Bastiaens[2], Tom Coussement[3] and Jozef Deckers[1]
[1] University of Leuven, Belgium; [2] Agentschap Voor Onroerend Erfgoed, Belgium; [3] Soil Service of Belgium, Belgium

P3-537 **Digging Deeper in Soil Classification: Could Buried Palaeosols be Adequately Represented in the World Reference Base System?**
Karen Vancampenhout* and Jozef Deckers
University of Leuven, Belgium

P3-538 **Symbols for Diagnostic Horizons: Experience of the Russian Soil Classification System and Proposals for Wrb**
Nikolay Khitrov* and Maria Gerasimova
V.V.Dokuchaev Soil Science Institute, Russia

P3-539 **Application of Wrb 2014 (fao) in the Greenhouse Gas Emissions Inventory for the Biennal Report in Land Use and Forestry of Mexico**
Carlos Omar Cruz Gaistardo[1]*, Rodrigo Vargas[2]*, Lucio Santos[3]*, Jorge E. Morfin-Rios[4]*, Jose Maria Michel Fuentes[4]*, Gustavo Rodriguez Alcaraz[3]*, Vanessa Maldonado Montero[3]* and Oswaldo Carrillo Negrete[4]*
[1] Instituto Nacional de Estadistica y Geografia, Mexico; [2] University of Delaware, Mexico; [3] United Nations Development Programme-Comision Nacional Forestal, Mexico; [4] Food and Agriculture Organization of the United Nations-Comision Nacional Forestal, Mexico

P3-540 **Suggestion For Modification Of The Setting Of Salt Affected Soils In The New Wrb Classification Key**
Erika Micheli[1]*, Marta Fuchs[1], Vince Lang[1], Tamas Szegi[1] and Szabolcs Szabari[2]
[1] Szent Istvan University, Hungary; [2] Government Office for Jasz Nagykun Szolnok County, Hungary

WG3: Understanding Acid Sulfate Soils: The Key to Their Proper Management

P3-541 **Ph and Lime Requirement of Soils on the Dike and on the Drained Pond Bottom of a Fish Pond on an Acid Sulfate Soils in Leyte, Philippines**
Arvin Talacay Ricacho[1], Aimee Tante Permito[1] and Faustino Villamayor[2]*
[1] Visayas State University Alangalang Campus Alumni, Alangalang, Philippines; [2] Visayas State University, Philippines

P3-542 **Correction of Sulfate Soils**
Mouhamadou Diop
Soil Science, Saed, Senegal

P3-543 **Response of Aluminium Dissolved in Soil Solution and Drainage Water on the Waterlogging of Cultivated Boreal Acid Sulphate Soils**
Seija Virtanen[1]*, Asko Simojoki[1], Jaana Uusi-Kamppa[2], Peter Osterholm[3] and Markku Yli-Halla[1]
[1] University of Helsinki, Finland; [2] MTT Agrifood Research Finland, Finland; [3] Abo Akademi University, Finland

P3-544 **Sulfidic Sediments and Acid Sulfate Soils in Sweden**
Gustav Sohlenius[1]*, Nelly Aroka[1], Hanna Wahlen[1], Jo Uhlback[1] and Jan Aberg[2]
[1] Geological Survey of Sweden (SGU), Sweden; [2] County Administrative Board of Vasterbotten, Sweden

P3-545 **Some Aspects of Acidification of the Coastal Saline Soils in Poland**
Piotr Hulisz, Nicolaus Copernicus University, Poland

P3-546 **Geochemical Characteristics of Acid Sulfate Soils in Thailand**
Tanabhatsakorn Sukitprapanon[1], Anchalee Suddhiprakarn[1]*, Irb Kheoruenromne[1], Somchai Anusontpornperm[1] and Robert J. Gilkes[2]
[1] Kasetsart University, Thailand; [2] University of Western Australia, Australia

P3-547 **Management of Sulfide Induced Acidity in Peat Extraction (suhe)**
Mirkka Hadzic[1]*, Heini Postila[2], Peter Osterholm[3], Ritva Nilivaara-Koskela[1], Minna Arola[2], Miriam Nystrand[3], Anssi Karppinen[1], Susan Kunnas[4], Bjorn Klove[2] and Raimo Ihme[1]
[1] Finnish Environment Institute (SYKE), Finland;
[2] University of Oulu, Finland; [3] Abo Akademi University, Finland; [4] Rovaniemi Unit, Finland

P3-548 **Changes in Soil Chemical Properties of an Acid Sulfate Soil in Malaysia with Addition of Calcium Silicate under Submerged Condition**
Elisa Azura Azman[1]*, Seishi Ninomiya[1], Roslan Ismail[2] and Shamshuddin Jusop[2]
[1]University of Tokyo, Japan; [2]Universiti Putra Malaysia, Malaysia

P3-549 **Coarse-Grained Low-Sulfur Acid Sulfate Soil Materials in Finland**
Anton Boman[1]*, Peter Eden[1], Peter Osterholm[2], Jaakko Auri[1] and Stefan Mattback[2]
[1] Geological Survey of Finland, Finland; [2] Abo Akademi University, Finland

P3-550 **Revised Acid Sulfate Soil Mapping Procedures Aand Classification in Finland**
Peter Eden[1]*, Anton Boman[1], Jaakko Auri[1], Emmi Rankonen[1], Peter Osterholm[2], Markku Yli-Halla[3] and Amelie Beucher[2]
[1] Geological Survey of Finland (GTK), Finland; [2] Abo Akademi University, Finland; [3] University of Helsinki, Finland

P3-551 **Evaluation of Laboratory Methods For Determining Lime Requirement of Philippine Acid Upland Soils**
Rona Dollentas[1], Pearl Sanchez[2] and Rodrigo Badayos[2]
[1] Philippine Rice Research Institute, Philippines; [2] University of the Philippines Los Banos, Philippines

P3-552 **Spatial Modelling Techniques for Acid Sulfate Soil Mapping in Finland**
Amelie Beucher[1]*, Peter Osterholm[1], Soren Frojdo[1], Annu Martinkauppi[2] and Peter Eden[2]
[1] Abo Akademi University, Finland; [2] Geological Survey of Finland, Finland

P3-553 **Subsurface Chemication of Acid Sulfate Soils - Effects on Water Quality**
Peter Osterholm[1]*, Miriam Nystrand[1], Sten Engblom[2] and Pekka Sten[3]

[1] Abo Akademi University, Finland; [2] Novia University of Applied Sciences, Finland; [3] Vaasa University of Applied Sciences, Finland

P3-554 **Mitigation of Water Pollution by Ground Water Control on Cultivated Boreal Acid Sulfate Soils**
Kari Ylivainio[1]*, Kristiina Regina[1], Peter Osterholm[2], Merja Maensivu[3], Eila Turtola[1] and Jaana Uusi-Kamppa[1]
[1] MTT Agrifood Research Finland, Finland; [2] Abo Akademi University, Finland; [3] Transport and the Environment in South Ostrobothnia, Finland

P3-555 **Distribution, Dynamics and Management of Acid Sulfate Soil in Vegetable and Rice Cultivation in Brunei Darussalam**
Thippeswamy Holige M[1], Hajah Suria Zanuddin[2] and Hajah Aidah Mohd Hanifah[3]
[1] Brunei Agriculture Research centre, Brunei; [2] Crop Industry Division, Brunei; [3] Department of Agriculture and Agrifood, Brunei

P3-556 **Digital Soil Mapping of a Coastal Acid Sulfate Soil Landscape**
John Triantafilis
School of BEES, UNSW, Australia

P3-557 **Acidity Neutralization through Chemical Weathering of Clay Minerals in Inland Acid Sulfate Soils**
Irshad Bibi[1]*, Balwant Singh[2] and Ewen Silvester[3]
[1] University of Agriculture Faisalabad, Pakistan; [2] The University of Sydney, Australia; [3] La Trobe University, Australia

P3-558 **Trends in Acid Sulfate Soil Research**
Leigh Sullivan
Southern Cross University, Australia

P3-559 **Acid Sulfate Soil Management Regulation and Guidance in Australia**
Leigh Sullivan and Chrisy Clay
Southern Cross University, Australia

WG9: Steps made toward a Universal Soil Classification

P3-560 **Proposals for the Classification of Hydromorphic Soils in the Universal Soil Classification System**
Cornie Van Huyssteen*
University of the Free State, South Africa

P3-561 **A New Global Soil Regions Map**
Paul Reich* and Thomas Reinsch
U.S. Department of Agriculture Natural Resources Conservation Service, USA

P3-562 **Diagnostics for the Classification of Tropical Soils**
Ben Harms[1]*, Lucia Anjos[2] and Thomas Reinsch[3]
[1] DSITIA, Australia; [2] UFRRJ, Brazil; [3]USDA, USA

P3-563 **Soil Climate Regimes and the Global Application in Soil Taxonomy**
Phillip Owens[1], Edwin Winzeler[1], Zamir Libohova[2] and Michele Duarte De Menezes[3]
[1] Purdue University, USA; [2] United States Department of Agriculture Natural Resources Conservation Service, USA; [3] Universidade Federal Rural do Rio de Janeiro, Brazil

P3-564 **Harmonizing Humus-Enriched Soil Groups in Different Soil Classification Systems Using Taxonomic Distance**
Alexey Sorokin[1]*, Vince Lang[2], Erika Micheli[2], Phillip Owens[3], Jonathan Hempel[4] and Pavel Krasilnikov[1]
[1] Lomonosov Moscow State University, Russia; [2] Szent Istvan University, Hungary; [3] Purdue University, USA; [4] USDA-NRCS, USA

WG10: Cryosols on a Changing Planet: Properties, Processes, Regimes and Functions

Soil Art *Featured artist: Betty Beier, Earth Print Archive, Germany, www.erdschollenarchiv.de*

P3-565 **Organic Carbon and Nitrogen Storages in Permafrost-Affected Soils of Yedoma-Underlain Areas of the Lena River Delta**
Sebastian Zubrzycki[1]*, Lars Kutzbach[1], Anne Morgenstern[2], Guido Grosse[2] and Eva-Maria Pfeiffer[1]
[1] Universitaet Hamburg, Germany; [2] Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Germany

P3-566 **Mineralogical "portraits" of Cryosols of Different Climates from Northern Eurasia**
Sofia Lessovaia[1]* and Sergey Goryachkin[2]
[1]St-Petersburg State University, Russia; [2] Russian Academy of Sciences, Russia

P3-567 **Toposequence of Salt-Affected Soils from Northern Part of Seymour (marambio) Island, Antarctica**
Carlos Schaefer, Davi Gjorup, Felipe Simas and Katia Keroline Delpupo Souza
Federal University of Vicosa, Brazil

P3-568 **Impacts of Human Activity on Antarctic Soils: A Review**
Megan Balks[1]*, Tanya O'neill[1] and Jackie Aislabie[2]
[1] University of Waikato, New Zealand; [2] Landcare Research Ltd, New Zealand

P3-569 **Transformations of Cryolithozone Soil Cover under the Influence of Natural and Anthropogenic Factors**
Roman Desyatkin*
Institute for Biological Problems of Cryolithozone SB RAS, Russia

P3-570 **Soils Thermal Regime in Sporadic Permafrost Areas (Russia,Western Siberia)**
Anna Bobrik*, Olga Goncharova and George Matyshak
Lomonosov Moscow State University, Russia

P3-571 **Humus Specificity of Shirmaher Oasis Soils (East Antarctica)**
Maria Dergacheva[1], Dmitriy Fedorov-Davydov[1] and Elia Zazovskaiya[2]
[1]the Russian Academy of Sciences, Russia; [2] Institute of Geography RAS, Russia

P3-572 **Cryogenic Transformation of Soil Solutions and the Formation of Salt Profiles in Solonchaks of Mongolia: Modeling Results and Interpretation**
Nadezhda Kiyashko, Ilyia Komarov and Dmitrii Golovanov
Lomonosov Moscow State University, Russia

P3-573 **Influence of Cryogenesis on Peatland Soils in the North of Western Siberia: Bare Peat Spots, Features and Functioning**
Ogneva Olga* and Matyshak George
Lomonosov Moscow State University, Russia

P3-574 **Soilcapes at the Volcanic Rocks of Lions Rump, Maritime Antarctica**
Carlos Schaefer[1], Ivan Carreiro Almeida[2] and Raphael Alves Fernandes[1]
[1]Federal University of Vicosa, Brazil; [2] Federal Institute-Januaria, MG, Brazil

P3-575 **Biological Productivity of Some Natural Ecosystem Soils of Yamal Forest-Tundra**
Tatiana Radchenko, Olga Nekrasova, Victor Valdayskikh and Anton Uchaev
Ural Federal University, Russia

P3-576 **Soils and Landscapes on Quartzite and Associated Drift at the Heritage Range, Ellsworth Mts, Continental Antarctica**
Carlos Schaefer[1], Ulisses Bremer[2], Karoline Delpupo Souza[1], Eduardo Senra1 and James Bockheim[3]
[1] Federal University of Vicosa, Brazil; [2] Federal University of Rio Grande do Sul, Brazil; [3] University of Wisconsin-Madison, USA

P3-577 **Soil Temperature Regime of Taiga-Alas Landscapes in Central Yakutia**
Alexey Desyatkin*
Institute for Biological Problems of Cryolithozone SB RAS, Russia

WG12: Unique Contributions of Hydropedology to Integrated Soil and Water Sciences

P3-578 **Optimal Soil Moisture Monitoring Design Based on Hierarchical Cluster and Temporal Stability Analyses**
Qing Zhu*, Kaihua Liao and Fei Xu
Chinese Academy of Sciences, China

P3-579 **Flood and Dikes Spatial and Temporal Changes Delineation Affecting Rice Soil Ecosystems in the Lower Mekong Using Modis Satellite Images**
Vo Quang Minh* and Cao Quoc Dat
Can Tho University, Viet Nam

P3-580 **Uncertainty Analysis in Near-Surface Soil Moisture Estimation at Two Typical Hillslopes in Taihu Lake Basin, China**
Kaihua Liao, Qing Zhu* and Fei Xu
Chinese Academy of Sciences, China

P3-581 **Nonchemical Water Treatment in Water Treatment**
Nemat Mamedov[1], G. Garibov[1], Sh. Alekberov[1], A. Sariyev[1] and Chingiz Gulaliyev[2]*
[1] Baku State University, Azerbaidjan; [2] Institute of Geography of National Academy of Science of the Azerbaijan, Azerbaidjan

P3-582 **Evaluation of Soil Water Retention PTFS for Tropical Mekong Delta Soils**
Minh Phuong Nguyen[1]*, Khoa Le Van[2], Yves-Dady Botula[1], Linh Tran Ba[1] and Wim Cornelis[1]
[1]Ghent University, Belgium; [2] Can Tho University, Viet Nam

P3-583 **Spatio-Temporal Variability and Temporal Stability of Profile Soil Moisture at a Hillslope Scale**
Lei Gao, Xinhua Peng and Hu Zhou
Chinese Academy of Sciences, China

P3-584 **Effects of Initial Aquifer Thickness and Extent of Water Application on Propagation of Water Pressure along Shallow Groundwater in a Simple Slope**
Takuhei Yamasaki*, Hiromi Imoto and Taku Nishimura
The University of Tokyo, Japan

P3-585 **Soil Organic Matter Controls of Soil Hydrological Functions in an Alpine Ecosystem in the Qinghai-Tibet Plateau**
Fei Yang, Gan-Lin Zhang*, Jin-Ling Yang and Min Yang
University of the Chinese Academy of Sciences, China

P3-586 **PGIS Tool for Erosion Susceptibility and Soil Conservation Planning in a Watershed of Nepal**
Krishna Prasad Bhandari[1]* and Prem Sagar Bhandari[2]
[1] Western Region Campus, Tribhuvan University, Nepal; [2] Birendra Multiple Campus , Tribhuvan University, Nepal

P3-587 **Developing Pedotransfer Functions to Simulate Wetting and Drying Branch of Soil Water Characteristic Curve**
Mohammad Reza Neyshabouri* and Roya Toluee
Univertisy of Tabriz, Iran

P3-588 **Survey and Mapping of Soil Moisture in Northeast Thailand**
Sumitra Watana*, Yooppayow Susajun, Saranya Norkeaw, Aniruth Pothichan and Somsak Sukchan
Office of Soil Survey and Soil Resources Research, Thailand

P3-589 **Relationship between Stream Water and Groundwater Using Time Series Analysis in the Lower Nakdong River Basin, South Korea**
Yun-Yeong Oh[1], Se-Yeong Hamm[1]*, Gyoo-Bum Kim[2], Chung-Mo Lee[1], Hong-Il Kwon[1], Yeon-Woo Choo[3] and Ming Liang Wei[1]
[1] Pusan National University, Korea; [2] Korea Water Resources Corporation, Korea; [3] Korea Rural Community Corporation, Korea

Poster Session 4 (P4)

June 13 (FRI)

C2.2-3: Behavior and Fate of Pollutants Entering the Soil Environment

Soil Art *Featured artist: Georg Dietzler, Germany, www.dietzlerge.org*

P4-1 **Chemical Properties of Tsunami Sediment and Risk Assessment of Heavy Metals by the Great East Japan Earthquake of March 2011**
Yoshishige Kawabe[1]*, Junko Hara[1], Tetsuo Yasutaka[1], Yasuhide Sakamoto[1], Ming Zhang[1] and Takeshi Komai[2]
[1] Aist, Japan; [2] Tohoku University, Japan

P4-2 **Assessing Risk of Heavy Metals from Human Activity on Rural Soils: A Case Study**
Nuria Roca* and Noelia Ramos
Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina

P4-3 **Effect of Conjoint Application of Sewage Sludge and Fertilizers on Trace Metals Accumulation in Plant and Soil under Rice Cultivation**
Satish Kumar Singh* and Ashish Latare
Banaras Hindu University, India

P4-4 **Effect of Fe(ii)/Cu(ii) Interaction on Reductive Transformation of Pollutants and Copper Aging Enhancement**
Liang Tao* and Fang-Bai Li
Guangdong Institute of Eco-environmental and Soil Sciences, China

P4-5 *(Moved to O69-8)* **Uptake of Pharmaceuticals by Soil Minerals**
Zhaohui Li[1]*, Wei-Teh Jiang[2] and Guocheng Lv[3]
[1] University of Wisconsin - Parkside, USA; [2] National Cheng Kung University, Taiwan; [3] China University of Geosciences, China

P4-6 **Fate of Munitions Constituents in the Environment by the Influence of the Cesium Charge Sites in Soils**
Rosalina Gonzalez, Herb Allen and Dominic Di Toro
University of Delaware, La Salle University, USA

P4-7 **The Bean (phaseolus Vulgaris L.) Rhizospheric Effect on the Desorption Kinetics of Zinc in Sewage Sludge Amended Soils**
Hamidreza Motaghian[1]* and Alireza Hosseinpur[2]
[1] Shahrekord University, Iran; [2] Soil science, Iran

P4-8 **Cadmium Contents of Soils and Cocoa Beans from Ghana**
Kwasi Ofori-Frimpong
Ghana Cocoa Board, Ghana

P4-9 **Arsenic Immobilization in Soil Using Iron-Based Amendments: Process Optimization by Response Surface Methodology**
Adel Reyhanitabar*, Elham Naseri and Shahin Oustan
University of Tabriz, Iran

P4-10 **Environmental Fate of Fluoride Applied to Soil and Plants**
J. Bernhard Wehr[1]*, Lisa Scholz[1], Peter M. Kopittke[1], F. Pax C. Blamey[1], Ya-Feng Zhou[1], David C. Macfarlane[2], Scott A. Dalzell[2] and Neal W. Menzies[1]
[1] The University of Queensland, Australia
[2] Santos Ltd, Australia

P4-11 **Zonation of Heavy Metals (CD, PB, NI, ZN, FE, MN and CU) in Arable Land of the Alborz Dam Downstream Basin-Iran**
Ali Cherati[1]*, Benafshe Sarafi[2] and Behnosh Jafari[3]
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P4-12 **Approaches to Revealing Relationships between the Heavy Metals Sorption and the Formation of Their Compounds in Soils**
Tatiana Minkina[1]*, Saglara Mandzhieva[1], Galina Motuzova[2], David Pinskii[3] and Tatiana Bauer[1]
[1] Southern Federal University, Russia; [2] Moscow State University, Russia; [3] Chemical and Biological Problems of Soil Science RAS, Russia

P4-13 **Inhibitory Effect of Silver Nanoparticles on Ryegrass Growth and Soil Enzyme Activity**
Chengliang Li*, Yanli Liu and Min Zhang
Agricultural University, China

P4-14 **Sorption of Heavy Metals, PB (ii), CU (ii), ZN (ii), And NI (ii) on Pine Bark Based Composts**
Elias Gichangi*, P.N.S Mnkeni and P Muchaonyerwa
Kenya Agricultural Research Institute, Kenya

P4-15 **Plant-Soil Interactions as Promoter for Increased Soil Function, Structure and Diversity in a Crude Oil Polluted Agricultural Field**
Eucharia Nwaichi[1], Magdalena Frac[2], Eugene Onyeike[3] and Ngozi Amadi[4]
[1] University of Port Harcourt, Nigeria; [2] Institute of Agrophysics Lublin, Poland; [3] University of Port Harcourt, Poland; [4] University of Port Harcourt, Nigeria

P4-16 **The Assessment of Arsenic Availability in Soils Using the In-Situ Diffusion Gradients in Thin Films Technique (dgt) - A Comparison Study of Dgt and the Typical Extraction Methods**
Jinjin Wang*, Lingyu Bai, Xibai Zeng*, Shiming Su, Ran Duan and Yuanyuan Sun
Chinese Academy of Agricultural Sciences, China

P4-17 **Polycyclic Aromatic Hydrocarbons in Post-Pyrogenic Soils of Drained Peatlands (Moscow Region, Russia)**
Anna Tsibart*, Alexander Gennadiev and Timur Koshovskii
Moscow State University, Russia

P4-18 **The Bean (Phaseolus Vulgaris L.) Rhizospheric Effect on the Desorption Kinetics of Copper Using Dtpa in Amended Soils with Sewage Sludge**
Alireza Hosseinpur and Hamidreza Motaghian
Shahrekord University, Iran

P4-19 **Btex Analysis Using a Headspace Gc-Ms In Soil and the Germination and Radicle Growth Inhibition by Btex**
Sungjin Lim, Jinhyo Kim, Geunhyoung Choi, Yubin Kwon, Namjune Cho and Byungjun Park*
Rural Development Administation, Korea

P4-20 **Adsorption of Anionic Surfactant on Silica**
Pengxiang Li* and Munehide Ishiguro
Hokkaido University, Japan

P4-21 **Chemical Interaction and Control of Antibiotic Tylosin in Soil/Sediment Systems**
Jim Wang* , Louisiana State University, USA

P4-22 **Adsorption of PB(ii) on Goethite-Bacteria-Humic Acid Composites**
Ke Dai* , Huazhong Agricultural University, China

P4-23 **Mercury Bioavailability as Affected by Organic Ligand in Aqueous Environment**
Xianghua Xu[1], Wenjuan Shi[2], Tony Zhuang[3], Tingting Xu[4], Steven Ripp[4], Fumin Menn[4], Alice Layton[4], Jie Zhuang[5]* and Gary Sayler[4]
[1] Nanjing University of Information Science and Technology, China; [2] Xi'an University of Technology, China; [3] Rice University, USA; [4] The University of Tennessee, USA; [5] Chinese Academy of Sciences, China

P4-24 **Identification of Arsenic Speciation and Accumulated Organic Species in Different Environment of Organic Sedimentation**
Junko Hara[1], Susumu Norota[2], Yasuyuki Kakihara[2], Yoshishige Kawabe[3] and Ming Zhang[3]
[1] National Institute of Advanced Industrial Science and Technology, Japan; [2] Geological Survey of Hokkaido, Japan; [3] National Institute of Advanced Industrial Science and Technology, Japan

P4-25 **Predicting Mineral Nitrogen Leaching Behavior of Soil Using Electrical Conductivity in Leachate Water Samples**
Keshav Raj Adhikari[1]* and Zueng-Sang Chen[2]
[1] Tribhuvan University, Nepal; [2] National Taiwan University, Taiwan

P4-26 **Spatialization of Pollution by Trace Metals in Urban Soils of Gounti Yena Valley, Niamey, Niger**
Abdourahamane Tankari Dan-Badjo[1]*, Yadji Guero[1], Nomaou Dan Lamso[1], Ibrahim Ousseini Zakaria[1], Cyril Feidt[2], Guillaume Echevarria Echevarria[2] and Thibault Sterckeman[2]
[1] Universite Abdou Moumouni de Niamey, BP, Niger; [2] Universite de Lorraine, INRA, France

P4-27 *(Moved to O69-7)* **Adsorption of Selected Pharmaceuticals in Representative Soils of the Czech Republic**
Radka Kodesova[1]*, Martin Kocarek[1], Ales Klement[1], Miroslav Fer[1], Oksana Golovko[2] and Roman Grabic[2]
[1] Czech University of Life Sciences Prague, Czech Republic
[2] University of South Bohemia in Ceske Budejovice, Czech Republic

P4-28 **Spectroscopic and Chemical Speciation of Chromium in Contaminated Paddy Soils**
Liang-Ching Hsu[1], Yu-Min Tzou[1], Yu-Ting Liu[2]* and Chiung-Fen Chang[2]
[1] National Chung-Hsing University, Taiwan; [2] Tunghai University, Taiwan

P4-29 **Bioavailability of Heavy Metal Compounds in the Soils Contaminated by Emissions from the Power Station**
Saglara Mandzhieva*, Tatiana Minkina, Victor Chapligyn and Marina Burachevskaya
Southern Federal University, Russia

P4-30 **Sorption Behavior of Bisphenol S (4,4'-Sulfonyldiphenol) on Agricultural Soils**
Younjeong Choi and Linda S. Lee*, Purdue University, USA

P4-31 **Lead Binding to Humic Substances: Nica-Donnan Modeling and Xafs Analysis**
Wenfeng Tan[1], Juan Xiong[1], Luuk K Koopal[2] and Liping Weng[2]
[1] Huazhong Agricultural University, China; [2] Wageningen University, Netherlands

P4-32 **Cd Distribution in the Soil and Rice in the Vicinity of the World's Largest and Longest-Operating Tungsten Mine in China**
Chunye Lin*, Mengchang He, Hongguang Cheng, Wei Ouyang and Xiao Shao
Beijing Normal University, China

P4-33 **Undisturbed Column Study: Heavy Metal Transfer from Soil to underground Water With Pig Slurry Application in a Silty Loam Soil**
Asuman Buyukkilic Yanardag*, Angel Faz Cano, Ibrahim Halil Yanardag and Melisa Gomez Garrido
Technical University of Cartagena, Spain

P4-34 **Diffusion of Ions in Organically Modified Clays - Experimental and Molecular Dynamics Study**
Roland Solc[1]*, Daniel Tunega[1], Stefan Dultz[2] and Birgit Schampera[2]
[1] University of Natural Resources and Life Sciences, Austria; [2] Leibniz University of Hannover, Germany

P4-35 **Assessment of Migration of Polychlorinated Byphenyls (pcbs) from Contaminated Plants in Soil**
Danila Aladin, Dmytry Demin, Nadezhda Deeva and Alevtina Ilyina
Institute of basic biology problems RAS, Russia

P4-36 **Soil Property Affect Arsenic Uptake in Garland Chrysanthemum (c. Coronarium) Fertilized with Chicken Manure Bearing Roxarsone and its Metabolites**
Lixian Yao[1]*, Lianxi Huang[2], Zhaohuan He[2], Changmin Zhou[2] and Guoliang Li[2]
[1] South China Agricultural University, China; [2] Guangdong Academy of Agricultural Sciences, China

P4-37 **Photo-oxidation of Cr (III) by Fe (III) in the Presence of Citric Acids**
Chung Tse Chang and Yu-Min Tzou*
National Chung Hsing University, Taiwan

P4-38 **Measurement and 1D Transport Modeling of Boron Movement in Some Calcareous Soils Affected by Different Ionic Strengths**
Faranak Ranjbar* and Mohsen Jalali, Bu-Ali Sina University, Iran

P4-39 **Changes in Total Content and in Chemical Fractionation of Cu and Zn in Soils Amended with Compost**
Maria Concepcion Ramos*
University of Lleida, Spain

P4-40 **Cadmium Imobilization by Amendments in Contaminated Latosols Cultivated with Lettuce**
Raphael Fernandes[1]*, Manuel Danilo Carrillo Zenteno[2] and Claudio Jordao[1]
[1] Federal University of Vicosa , Brazil; [2] Instituto Nacional Autonomo de Investigaciones Agropecuarias (INIAP) - Quevedo - Los Rios, Ecuador

P4-41 **Soil solution Partitioning of Gold and Silver in Soils Amended with Nanoparticles**
Sonia Rodrigues[1]*, Daniela Tavares[1], Tiago Teixeira[1], Cindy Carvalho[1], Nuno Cruz[1], Lina Carvalho[1], Armando Duarte[1], Tito Trindade[1], Paul Romkens[2] and Eduarda Pereira[1]
[1] Universidade de Aveiro, Portugal; [2] Alterra - Wageningen University and Research Center, Netherlands

P4-42 **Effects of Arsenic and Phosphate on Plant Biomass and Their Accumulation by an Arsenic Hyperaccumulator Pteris Vittata L**
Nur Aini Abu Bakar, Che Fauziah Ishak* and Aminuddin Hussin
University Putra Malaysia, Malaysia

P4-43 **Characterisation of Phenanthrene Associated with Naturally Occurring Colloids in Soil Extracts Using an Isotopic Dilution Technique**
Ehsan Tavakkoli
The University of Adelaide, Australia

P4-44 **Mechanism of Phosphate and Citric Acid Affecting Pb2+ Adsorption by Red Soil Colloids**
Qingling Fu, Jichao Zuo, Hongqing Hu* and Jun Zhu
Huazhong Agricultural University, China

P4-45 **Dissipation and Leaching of Atrazine in Maize Grown on No-Till and Conventional Tillage Soils in Peninsular India**
Ramprakash Tata[1]*, Madhavi Molluru[2] and Yakadri Maddela[1]
[1] ANGRAU, India; [2] Acharya N. G. Ranga Agricultural University, India

P4-46 **Fixation of Arsenic by Fe-Nodules in Soils of the Southern Taiga**
Lev Bogatyrev[1], Yuri Vodyanitskii[1], Elena Pogozheva[1]*, Evgeny Pogozhev[2]*, Alexandr Ivanov[1] and Inna Antonova[1]
[1] Lomonosov Moscow State University, Russia; [2] GEOFORUM, Russia

P4-47 **Human Health Risk Assessment of Barium from Barite Contaminated Soils Based on Gastric Phase in Vitro Data and Plant Uptake**
Sedigheh Abbasi, Dane Lamb*, Thavamani Palanisami, Mallavarapu Megharaj and Ravi Naidu
University of South Australia, Australia

P4-48 **Mid Infrared Spectroscopy and Partial Least-Squares Regression: A Rapid and Cost-Effective Approach to Estimate Soil Arsenic Content**
Nabeel Khan Niazi[1]*, Balwant Singh[2] and Budiman Minasny[2]
[1] University of Agriculture Faisalabad, Pakistan/The University of Sydney, Pakistan; [2] The University of Sydney, Australia

P4-49 **Sorption-Desorption Behavior of Radiocesium in Soils and its Transfer to Crops**
Sreenivasa Chari M. and Manjaiah K.M.*
IARI, India

P4-50 **Sediments Phosphorus Dynamics in a Southern Brazilian Watershed with Contrasting Land Uses**
Mohsin Zafar*, Danilo Rheinheimer Dos Santos and Tales Tiecher
Universidade Federal de Santa Maria - UFSM, Brazil

P4-51 **Impact of Anaerobic Bacterial Activities on the Dynamic and Speciation of Mercury in Tropical Soils in French Guiana**
Mira Toubassy*, Vanessa Alphonse and Noureddine Bousserrhine
Bioemco, France

P4-52 **Determination of Plant-Available Cadmium in Cacao Plantations in Southern Ecuador: Chemical Extraction and Fractionation Analysis**
Eduardo Chavez[1], Byron Moyano - Delpezo[2], Rao Mylavarapu[3], Yuncong Li[4], Peter Stoffella[3], Virupax Baligar[5] and Zhenli He[1]*
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P4-53 **Batch and Column Methods Comparison on Sorption and Desorption of Zinc in a Sandy Soil**
Habib Ramazanzadeh, Shahin Oustan, Mohammad Reza Neyshabouri and Adel Reyhanitabar*
University of Tabriz, Iran

P4-54 **Effect of Temperature and Sewage Sludge on Macro and Micro Nutrient Availability in Different Soils of India**
Pramod Sharma
Institute of Agricultural Sciences Banaras Hindu University, India

P4-55 **Mobility of Cu and Co in Metalliferous Ecosystems of Katanga: Comparison of Soil Profiles And Experimental Results**
Donato Kaya Muyumba[1], Olivier Pourret[2], Gregory Mahy[3], Michel N'gongo[4] and Gilles Colinet[5]*
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P4-56 **Formation Mechanisms for Chromium Hydroxide Precipitation on Mineral Surfaces: the Impact on Contaminant Mobility in the Soil Environment**
Jason Fischel[1], Gautier Landrot[2] and Donald Sparks[1]
[1] University of Delaware, USA; [2] Kasetsart University, Thailand

P4-57 **Kinetics of Arsenic Oxidation by Manganese Oxide Minerals: The Influence of Origin and Structure on Reactivity**
Matthew Fischel[1], Jason Fischel[1], Brandon Lafferty[2] and Donald Sparks[1]
[1] University of Delaware, USA; [2] United States Army Corps of Engineers, USA

P4-58 **Evaluation of Heavy Metals Concentration in Shoormast Lake**
Nazanin Khakipour* and Ehsan Badri
Islamic Azad University, Iran

P4-59 **Effects of Halogenation and Nitrogen(n)-Heterocyclic Aromatics on Estimating the Persistence of Future Pharmaceutical Compounds in the Sub-Surface**
Seung Lim*
Korea Atomic Energy Research Institute, Korea

P4-60 **Plant Toxicity and Uptake of Rdx and TNT by Sweet Sagewort (Artemisia Annua)**
Hannah Oh, Nurofik Rosikin and Won Sik Shin*
Kyungpook National University, Korea

P4-61 **Optimizing Concentrations of Hemoglobin and Hydrogen Peroxide for Remediation of Benzo(a)pyrene (b[a]p) Contaminated Soils**
Hyein Keum, Kapsong Park, Jeffrey S Owen and Guyoung Kang*
Hankuk University of Foreign Studies, Korea

P4-62 **Leaching of Metallic Elements from Abandoned Mine Soils Depending on Various Flow Conditions**
Juhee Kim* and Seunghun Hyun
Korea University, Korea

P4-63 **Role of Recycled Water Sources in the (im)mobilization and Bioavailability of Copper in Soils**
Anitha Kunhikrishnan[1*], Nanthi Bolan[2], Ravi Naidu[3] and Won-Il Kim[1]
[1] National Academy of Agricultural Science, Korea; [2] University of South Australia, Australia; [3] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, Australia

P4-64 **Enhanced Bioavailability of Hexabromocyclododecane (hbcd) Diastereoisomers to Plants by Humic Acids**
Min-Hui Son, Jae-Hwan Kim, Hak-Won Yoon and Yoon-Seok Chang*
POSTECH, Korea

P4-65 **Effect of Liming on Chemical Speciation of Phosphorus in a Deforested Soil**
Ji-Suk Park and Hee-Myong Ro*
Seoul National University, Korea

P4-66 **Establishment of Efficient Sample Pre-Treatment Method for the Analysis of Pesticide Residue in the Soil Using with Hplc-Ms/ms**
Ji Hyeong Kwon[1], Taek-Kyum Kim[1*], Su Myung Hong[1], Ki Seong Kyung[2], Dae Young Jang[1], Eun Kyung Seo[1] and Hye Young Kwon[1]
[1] NAAS, RDA, Korea; [2] Chungbuk National University, Korea

P4-67 **Changes in Gene Expression under the Controlled Exposure on Soil Nematode Caenorhabditis Elegans**
Ji-Yeon Roh and Jung-Hwan Kwon*
Korea University, Korea

P4-68 **Assessment on the Content of Cu and Zn in Citrus Orchard Soils in Jeju of Korea**
Ho-Jun Kang*, Sang-Ho Yang, Yu-Kyoung Kim, Shin-Chan Lee, Bong-Chan Kim and Sang-Soon Lee
Jeju Special Self-governing Province Agricultural Research and Extension Services, Korea

P4-69 **Effect of Various Stabilization Additives on the Cationic and Anionic Metal Stabilization in Contaminated Soils**
Jae E. Yang[1*], Seung Min Oh[1], Rog-Young Kim[1], Se Jin Oh[1], Sung Woo Moon[1], Sung Chul Kim[2], Jin-Soo Lee[3] and Su-Jung Kim[4]
[1] Kangwon National University, Korea; [2] Chungnam National University, Korea; [3] Korea Mine Reclamation Corporation(MIRECO), Korea; [4] Dongguk University, Korea

P4-70 **Efficiency of Stabilization Methods Applied to Paddy Soil for Stabilization Cadmium in Soil and Crop Safety**
Jae E. Yang[1*], Se Jin Oh[1], Sung Chul Kim[2], Yong Sik Ok[1], Jin Soo Lee[3] and Su-Jung Kim[4]
[1] Kangwon National University, Korea; [2] Chungnam National University, Korea; [3] Korea Ming Reclamation Corporation(MIRECO), Korea; [4] Dongguk University, Korea

P4-71 **Phytoaccumulation of Veterinary Antibiotics with Varied Cultivation Condition**
Saet Byul Park, Young Gyu Hong, Sun Ju Kim and Sung Chul Kim*
Chungnam National University, Korea

P4-72 **Soil Toxicity of Titanium Dioxide Nanoparticles and Arsenic in the Nematode Caenorhabditis Elegans**
Jinhee Choi, Dong-Young Lim and Jae-Sung Jung
University of Seoul, Korea

C2.4-2: Roles of Minerals as Suppliers and Regulators of Plant Nutrients

P4-73 **Clay Mineral Transformation Controlling the Availability of Cr and Ni in Paddy Soils**
Zeng-Yei Hseu[1*], Franz Zehetner[2] and Franz Ottner[2]
[1] National Pingtung University of Science and Technology, Taiwan; [2] University of Natural Resources and Applied Life Sciences (BOKU), Austria

P4-74 **Bio-Based Polymer Composites Derived from Corn Stover and Feather Meals as Double-Coating Materials for Controlled-Release and Water-Retention Urea Fertilizers**
Yuechao Yang[1*], Zhaohui Tong[2], Yuncong Li[2], Yuqing Geng[1] and Min Zhang[1]
[1] Shandong Agriculture University, China; [2] University of Florida, USA

P4-75 **Phosphorus Speciation in Poultry Litter during the Composting Process Determined by P K-Edge Xanes, 31p-NMR and Sequential Fractionation**

Yohey Hashimoto[1]*, Akira Takamoto[1], Noriko Yamaguchi[2] and Keiichi Murakami[3]
[1] Tokyo University of Agriculture and Technology, Japan; [2] National Institute for Agro-environmental Sciences, Japan; [3] Mie Prefecture Department of Agriculture, Fisheries, Commerce and Industry, Japan

P4-76 **Change in Availability Of Phosphorus, Cadmium and Zinc Applied in Monoammonium Phosphate after Termination of Fertilizer Application**
Cynthia Grant[1], Ahmad Raza Sheik Hosseini[2], Don Flaten[2], Olalekan Akinremi[2], Oluwatoyin Obikoya[2] and Sukhdev Malhi[2]
[1] Agriculture and Agri-Food Canada, Canada; [2] University of Manitoba, Canada

P4-77 **Evaluation of Integrated Use of Sewage Sludge and Fym with Chemical Fertilizers on Yield and Quality of Carrot(Daucus Carota)-Bhendi (abelmoschus Esculentus) Cropping Systems**
Kalvakuntla Jeevanrao* and Shilaja V
ANGRAgricultural University, India

P4-78 **Arsenic and Cadmium Bioavailability to Rice Correlated with Silica Speciation in Paddy Soil**
Shirong Zhang, Chuanping Liu, Xianghua Xu and Fangbai Li*
Guangdong Institute of Eco-Environmental and Soil Sciences, China

P4-79 **The Relationship between Plant Growth and Nutrients**
Peter Ghaali[1]* and Paul Bamubingirire[2]*
[1] Support Needy Lovely Centre, Uganda; [2] Save the Marginalized, Uganda

P4-80 **Redox-Related Role of Mineral Oxides on Zn Solubility Dynamics in Flooded Rice Soils**
Michelle Anne Bunquin[1], Susan Tandy[2], Rainer Schulin[2], Alamgir Hossain[3], Francis Rubianes[1] and Sarah Johnson-Beebout[1]
[1] International Rice Research Institute, Philippines; [2] Institute for Terrestrial Ecosystems, Switzerland; [3] Bangladesh Rice Research Institute, Bangladesh

P4-81 **Investigation of Potassium Distribution in Agricultural Soils by Combination of Micro X-Ray Fluorescence and X-Ray Absorption Near-Edge Spectroscopy (xanes) Full-Field Imaging**
Camille Rivard[1]*, Bruno Lanson[2], Barbara Fayard[3], Emeline Pouyet[1] and Marine Cotte[1]
[1] European Synchrotron Radiation Facility, France; [2] Universite Grenoble Alpes - CNRS, France; [3] Universite Paris-Sud, France

P4-82 **Effects of Active Aluminium and Iron on Phosphate Extractability with Special Reference to Soil Micro- and Meso-Pores**
Tetsuhiro Watanabe[1]*, Emiko Hase[1], Shinya Funakawa[1] and Takashi Kosaki[2]
[1] Kyoto University, Japan; [2] Tokyo Metropolitan University, Japan

P4-83 **Stable Cesium Uptake by Rice Plant with Different Amendments under Flooded and Temporal Upland Condition**
Shun Nishiyama, Masanori Okazaki*, Koyo Yonebayashi and Tomoe Nishi
Ishikawa Prefectual University, Japan

P4-84 **Remineralization, Remediation and Recovery: A New Route for Sustainability**
Suzi Theodoro[1], Othon Leonardos[1], Daniel Carneiro[2] and Fernanda Medeiros[1]
[1] University of Brasilia, Brazil; [2] IPOEMA, Brazil

P4-85 **The Diversity of Plants in Subalpine Meadows of Wugong Mountain in Jiangxi Province of China**
Zhi Li[1], Wenyuan Zhang[1], Dekui Niu[1], Xiaomin Guo[1]*, Xia Gong1, Xiaohua Wei[2], Weiping Qian[3] and Huiwu Peng[3]
[1] Jiangxi Agricultural University, China; [2] University of British Columbia (Okanagan campus), Canada; [3] Pingxiang Forestry Science Institute, China

P4-86 **Chemical and Mineralogical Characteristics of the Wonosegoro Clays Java Island Indonesia**
Mohammad Nurcholis and Aris Buntoro
Universitas Pembangunan Nasional 'Veteran' Yogyakarta, Indonesia

P4-87 **Organic Inputs and Mineral Fertilizer Effects on Soil Chemical Properties, and Maize Productivity in Mbeere District, Kenya**
Mucheru-Muna MW[1]*, Ngetich F[2], Mugendi DN[2], Mugwe JN[1], Franklin Mairura[3], Vanlauwe B[4], Jan Diels[5] and Merckx R[5]
[1] Kenyatta University, Kenya; [2] Embu University College, Kenya; [3] Institute of CIAT, Kenya; [4] International Institute for Tropical Agriculture, Kenya; [5] K.U. Leuven, Kenya

P4-88 **Proximate, Mineral and Vitamins**
Ngwu O.E.* and Ikeanwuba P.C.
Enugu State University of Science and Technology, Nigeria

P4-89 **Effects of the Applications of the Clay Minerals on the Early Growth of Red Pepper in the Horticultural Bed Soil**
Keun Yook Chung[1]*, Jai-Joung Kim[1], Sun-Hee Woo[1], Moon-Soon Lee[1], Deok-Hyeon Kim[1], Dong-Gi Lee[2], Jong-Soon Choi[2] and Ju-Hyun Nam[2]
[1] Chungbuk National University, Korea; [2] Korea Basic Science Institute, Korea

P4-90 **Effects of the Additions of Clay Minerals Illite and Zeolite as Inorganic Materials on The Growth of Chinese Cabbage in Horticultural Bed Soil**
Deok-Hyeon Kim[1], Jong In Kim[1], Da Hee Sin[1], Sang-Moon Kwon[1], Hee-Kee Cho[2], Moon-Soon Lee[1], Sun-Hee Woo[1], Keun Yook Chung[1]* and Jai-Joung Kim[1]
[1] Chungbuk National University, Korea; [2] NongKyung Media Company, Korea

P4-91 **Mineralogical Characterization of Tremolite Asbestos-Containing Soils of S. Korea**
Hoju Lim[1]*, Dong Jin Kim[1], Chaehyang Lee[1]* and Yul Roh[2]
[1] Wonju Regional Environmental Office, Korea; [2] Chonnam National University, Korea

C2.5-1: Advances in Techniques to Investigate Chemical, Physical and Biological Interfaces in Soils

Soil Art *Featured artist: Laura Parker, Taste of Place, Laura Parker Studio, USA, www.lauraparkerstudio.com*

P4-92 **Effect of Long-Term Spentwash Application on Soil Physical, Chemical and Biological Properties**
Vittal Kuligod*, Rubeena C. M. and Mahamedali Doddamani
University of Agricultural Sciences Dharwad, India

P4-93 **Influence of Long Term Fertilization on the Evolvement of Soil Organic Matter Evaluated by Mid-Infrared Photoacoustic Spectroscopy**
Du Changwen[1]*, Zhou Jianmin[1] and Keith Goyne[2]
[1] Institute of Soil Science Chinese Academy of Sciences, China; [2] Uiniversity of Missouri, USA

P4-94 **Advances in Techniques to Study the Influence of Earthworms on Soil Structure**
Nicolas Bottinelli[1]*, Pascal Jouquet[2], Yvan Capowiez[3] and Xinhua Peng[1]
[1] CAS, China; [2] Indian Institute of Science, India; [3] INRA, France

P4-95 **Characterization of Ethyl Acetate Extract of Neurospora Crassa Using Gas Chromatography- Mass Spectrometer**
Adewole Ezekiel[1]* and Lajide L[2]
[1] Afe- Babalola University,Ado-Ekiti(Abuad), Nigeria;[2] Federal University of Technology, Nigeria

P4-96 **The Fe Uptake Mechanisms of Paddy Rice in Different Concentrations of Fe (iii) and Fe (ii) Hydroponic Solutions**
Chuan-Fu Kao[1], Zsin-Fang Chang[2], Der-Chuen Lee[3], Jang-Hung Huang[1]* and Shan-Li Wang[2]*
[1] National Chung Hsing University, Taiwan;[2] National Taiwan University, Taiwan; [3] Institute of Earth Sciences, Academia Sinica, Taiwan

P4-97 **Electrochemical Analytical Method for Determination of Available Cadmium in Soil with Screen-Printed Carbon Electrodes**
Chang Jie Cheng and Shan-Li Wang*
National Taiwan University, Taiwan

P4-98 **The Use of Soil Thin Sections for the Study of Organic Matter Stabilisation**
Clare Wilson[1]*, Gloria Falsone[2], Joanna Cloy[3], Kate Smith[4], Margaret Graham[5] and Eleonora Bonifacio[6]
[1] University of Stirling, United Kingdom; [2] Universita di Bologna, Italy; [3] SRUC, United Kingdom; [4] ADAS UK Ltd, United Kingdom; [5] University of Edinburgh, United Kingdom; [6] Universita degli studi di Torino, Italy

P4-99 **Soil Olsen-P Accumulation Models and Prediction Estimation of Soil Olsen-P Accumulation by Models in China**
Jumei Li[1], Yibing Ma[1]* and Bin Wang[2]*
[1] Chinese Academy of Agricultural Sciences, China; [2] Xinjiang Academy of Agricultural Sciences, China

P4-100 **Chemical Compositions of Iron Plaque and Root Exudates of Different Rice Cultivars Grown in Fe(ii) and Fe(iii) Hydroponic Solutions**
Zin-Fang Chang[1], Chun-Hui Yu[1], Der-Chuen Lee[2], Yen-Fang Song[3], Jyh-Fu Lee[3] and Shan-Li Wang[1]*
[1] National Taiwan University, Taiwan; [2] Institute of Earth Science, Acdemia Sinica, Taiwan; [3] National Synchrotron Radiation Research Center, Taiwan

P4-101 **Time Course Analysis of Fe Uptake and Translocation in Rice Plants**
Chun-Hui Yu[1], Kuo-Chen Yeh[2] and Shan-Li Wang[1]*
[1] National Taiwan University, Taiwan;[2] Agricultural Biotechnology Research Center, Academia Sinica, Taiwan

P4-102 **Investigation of the New Soil Substitutes for Cultivation Legume-Rhizobia Symbiosis under Simulated and Real Microgravity**
Arsen Viter*
M.M.Gryshko National Botanical Garden of N.A.S. of Ukraine, Ukraine

P4-103 **The Role of Total and Active Calcium Carbonate Equivalent in Availability of Some Soil Micronutrients**
Ahmad Heidari*
University of Tehran, Iran

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[1] University of New England, Australia; [2] University of Western Sydney, Australia; [3] The University of Adelaide, Australia

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Technological Educational Institute of Western Greece (TEIWG), Greece

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Young Han Lee[1]*, Hang-Yeon Weon[2], Seong-Tae Lee[1], Kwang-Pyo Hong[1], Sang-Dae Lee[1] and Hyun-Yul Shin[1]
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Young Han Lee[1]*, Seong-Soo Kang[2], Seong-Tae Lee[1], Kwang-Pyo Hong[1], Sang-Dae Lee[1] and Hyun-Yul Shin[1]

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Eun Sil Park and Sung Eun Lee*
Kyungpook National University, Korea

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[1] Hankyong National University, Korea; [2] Rural Development Administration, Korea

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Tongxu Liu, Xiaomin Li and Fangbai Li*
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Guangdong Institute of Eco-Environmental and Soil Sciences, China

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Bruce James[1]* and Winfried Blum[2]
[1] University of Maryland, USA; [2] University of Natural Resources and Life Sciences (BOKU), Austria

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[1] University of Calabar, Nigeria; [2] University of Uyo, Nigeria

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[1] National Pingtung University of Science and Technology, Taiwan; [2] Biodiversity Research Center, Academia Sinica, Taiwan; [3] National Taiwan University, Taiwan; [4] Taiwan Forestry Research Institute, Taiwan

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Bhabananda Biswas[1]*, Binoy Sarkar[1], Asit Mandal[2] and Ravi Naidu[1]
[1] University of South Australia, Mawson Lakes Campus, Australia; [2] Indian Institute of Soil Science, India

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Huayong Wu, Wenli Chen, Peng Cai, Xingmin Rong, Ke Dai and Qiaoyun Huang*
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Nanjing agricultural University, China

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Sanjib Kar* and Sourav Kumar Khan
University of Calcutta, India

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Natalia Patucci[1]*, Deborah De Oliveira[1] and Dilmar Baretta[2]
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Lawrence Nanganoa[1], Ketcha Joseph[2]* and Tchakoute Herve[2]
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Hung Truong Phuc[1], Truong Le Van[1], Ngo Dinh Binh[2], Roger Frutos[3], Herve Quiquampoix[4] and Siobhan Staunton[4]
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Margaret Abhanzioya[1], Ikponmwosa Ogboghodo[2]* and Ikpotokin Osemwota[2]
[1] Ambrose Alli University, Nigeria; [2] University of Benin, Nigeria

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[1] Jiangxi Agricultural University, China; [2] Pingxiang Forestry Science Institute, China

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Asit Mandal[1]*, Binoy Sarkar[2], Bhabananda Biswas[2], Mohammad Mahmudur Rahman[2] and Ravi Naidu[2]
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Jianming Xu*, Huiming Chen, Xinyu Zhu, Yan He and Philip C. Brookes
Zhejiang University, China

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Tatiana Zubkova*
Lomonosov Moscow State University, Russia

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Feinan Hu*, Hang Li*, Yue Li and Wuquan Ding
Southwest University, China

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U. C. Sharma[1]* and Vikas Sharma[2]
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Technical University Freiberg, Germany

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Pheerawat Plangoen*
Siam University, Thailand

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[1]University of Alberta, Canada; [2] Chonnam National University, Korea; [3] Agriculture and Agri-Food Canada, Canada

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Pascal Jouquet[1], Nicolas Bottinelli[2] and Thuy Doan Thu[3]
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Rafaella Fontes[1]*, Ana Carolina Dos Santos[1], Nelson Fernandes[1], Jose Marcus Godoy[2], Silvio Bhering[3] and Christiane Brazao Pinto[1]
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Yogi Vemana University, India

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[1] Fujian Agriculture and Forestry University, China; [2] National Taiwan University, Taiwan

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Shufang Wu*
Northwest A&F University, China

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Jianhui Zhang and Yong Wang
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Dante Margate[1]* and John Bavor[2]
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Rui Jiang* and Xiao Li
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Institute of Agricultural Research and Training, Nigeria

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Nansen Environmental Research Centre (India), India

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Rokhaya Fall[1] and Mamadou Bocoum[2]
[1] FAO, Senegal; [2] Institut National de Pedologie, Senegal

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Brendon Malcolm, Keith Cameron, Grant Edwards, Hong Di and Jim Moir
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Xihua Yang[1], Bofu Yu[2] and Mark Littleboy[1]
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[2] Griffith University, Australia

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Alexander Chumbaev* and Anatoly Tanasienko
Siberian Branch of Russian Academy of Sciences, Russia

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Xavier Morvan, Loic Verbeke and Sebastien Laratte
University of Reims Champagne-Ardenne, France

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Minyoung Kim*, Seounghee Kim, Sangbong Lee, Yongho Cho, Youngjin Kim and Yonghun Choi
Rural Development Administration, Korea

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[1] University of Bayreuth, Germany; [2] Konkuk University, Korea

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Marcio Nikkel and Saulo De Oliveira Lima
Universidade Federal do Tocantins, Brazil

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Haijing Shi and Zhongming Wen*
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P4-174 **Contribution Rate of Influent Factors Affecting Soil Moisture and its Scale Effect in Loess Plateau, China**
Feng Jiao[1]*, Zhang Zhe[2] and Ning-Xia Liang[2]
[1] Chinese Academy of Science and Ministry of Water Resource, China; [2] Northwest A&F University, China

P4-175 **Investigation of Erosion Degree at Agricultural Terrain in Southern Moravia by Using of Soil Magnetic Parameters**
Ales Kapicka[1]*, Sarka Dlouha[1], Eduard Petrovsky[1], Ondrej Jaksik[2] and Hana Grison[1]
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Mads Troldborg*, Nikki Baggaley, Rupert Hough, Inge Aalders, Blair Mckenzie, Willie Towers and Allan Lilly
The James Hutton Institute, United Kingdom

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Hossein Asadi*, Kossar Daneshyar and Mohammad Aligoli
University of Guilan, Iran

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University of Amsterdam, Netherlands

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Radka Kodesova[1]*, Ondrej Jaksik[1], Ales Klement[1], Miroslav Fer[1], Ondrej Drabek[1] and Ales Kapicka[2]
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University of Lleida, Spain

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Carolina Benito, Maria Concepcion Ramos* and Jose A. Martinez-Casasnovas
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Chunying Wang[1]*, Ryusuke Hatano[1], Rui Jiang[2], Kanta Kuramochi[1] and Atsushi Hayakawa[3]
[1] Hokkaido University, Japan; [2] Northwest A&F University, China; [3] Akita Prefectural University, Japan

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University of Yazd, Iran

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Hiroaki Sumida[1]*, Takayuki Kobayashi[1], Kawahigashi Masayuki[2], Do Minh Nhut[3] and Nguyen Bao Ve[4]
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Costica Ailincai, Gerard Jitareanu*, Lucian Raus and Denis Topa
University of Agricultural Sciences and Veterinary Medicine - IASI, Romania

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Attila Nemes[1]*, Marianne Bechmann[1], Sigrun Kværnø[1], Lillian Øygarden[1] and Trond Børresen[2]
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Tales Tiecher[1]*, Danilo Dos Santos Rheinheimer[1], Ricardo Bergamo Schenato[2], Maria Alice Santanna1 and Laurent Caner[3]
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Khaled Mohamed Darwish[1]*, W.a.m. Abdel Kawy[2] and R. Zoelitz[3]
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P4-190 **Soil Erosion Vis-A-Vis Soil Physical Quality in Shiwaliks of Lower Himalayas of India**
Manmohan J Singh* and Surinder S Kukal
Punjab Agricultural University, India

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Carolina Benito and Maria Concepcion Ramos*
University of Lleida, Spain

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Xiaomei Yang[1]*, Fei Wang[1], Celia Martins Bento[2], Coen Ritsema[2] and Violette Geissen[2]
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P4-193 **Phosphorus Fractions in Agricultural Constructed Wetland Sediment: Depletion of Plant Available Phosphorus as a Response to Erosion and Redox Reactions**
Johanna Laakso[1]*, Markku Yli-Halla[1] and Risto Uusitalo[2]
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P4-194 **Protective Role of Humic Acids on DNA Methylation Caused Cadmium Stress in Vicia Faba Seedlings**
Guleray Agar[1], Esra Arslan[1]*, Medine Gulluce[1], Metin Turan[2] and Fikrettin Sahin[2]
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Janis Boettinger*, Julie Baker and Brook Fonnesbeck
Utah State University, USA

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Environmental Quality, NEIKER, Spain

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Alan Schlegel[1]* and John Havlin[2]
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Md. Monirul Islam* and Shamsun Noor
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P4-445 **Targeted Yield Model as a Tool for Fertiliser Best Management Practice in a Maize Based Cropping Sequence of Tamil Nadu, Southern India**
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Peter Tamas Nagy*
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P4-450 **Enhance of Nutrient Supply of Soil by Groundcovering in a Hungarian Peach Orchard**
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Dr. Md Mahbubul Alam Tarafder[1] and Dr. Md. Baktear Hossain[2]
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MD. Bhuiyan*, F. Alam and M.B. Banu
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P4-457 **Potassium Balance and Soil Exchangeable Potassium Accumulation in the Intensive Vegetable Fields of China**
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P4-466 **Effect of Salicylic Acid Treatment on Soil Moisture Shortage Stress of Waxy Corn (zea Mays L.)**
Youngho Seo*, Sihwan Ryu, Jongyeol Park, Jaekeun Choi, Kijin Park and Kyunghi Kim
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P4-467 **Testing of Different Fertilizer Practice on Carrot in up Country Intermediate Zone (UCIZ) Sri Lanka**
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Hyunjoon Cho, B. K. Hyun and H. C. Chun, RDA, Korea

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Seung Chul Choi[1]*, Soojeong Lim[2], Byeong Sung Yoon[2], Sujeong Heo[2], Jaerok Kim[2] and Seongsoo Kang[3]
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Young-Hun Moon[1]*, In-Young Choi[1], Byung-Koo Ahn[1], Seong-Soo Cheong[1], Jin-Ho Lee[2] and Nam-Ki Oh[1]
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P4-474 **Impacts of Green Manure Crop Applications on Soil Properties and Ginger Grown in Continuous Cropping System**
Hong-Seok Yang[1], Dong-Jin Kim[1], Won-Jae Lee[1], Da-Seul Kang[1], Byung-Koo Ahn[2] and Jin-Ho Lee[1]*
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Won-Jae Lee[1], Dong-Jin Kim[1], Hong-Seok Yang[1], Da-Seul Kang[1], Byung-Koo Ahn[2] and Jin-Ho Lee[1]*
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Byung-Koo Ahn[1]*, Hyong-Gwon Chon[1], Seong-Soo Jeong[1], Jin-Ho Lee[2] and Nam-Ki Oh[1]
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P4-478 **The Effect of Different Nutrient Sources on Soil Properties and Corn Yield at Newly Reclaimed Land**
Min-Tae Kim*, Kwang Seop Kim, Ki-Do Park, Jin-Hee Ryu, Jong-Seo Choi, Weon-Tai Jeon, Suk-Jin Kim, Yi-Hoon Park, Myung-Chul Seo, Yong-Hwan Lee, Choon-Woo Lee and Hang-Won Kang
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P4-479 **Effects of Mixed Treatment with Urea Fertilizer and Zeolite on Growth of Hot Pepper (Capsicum Annuum)**
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P4-480 **Metabolite Profiling of Potassium Deficiency in Tomato**
Suyeon Lee, Hyejin Yun, Sangkeun Ha, Deogbae Lee and Jwakyung Sung*
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P4-481 **Metabolite Profiling of Phosphorus Nutrient Deficiency in Tomato**
Hyejin Yun, Suyoun Lee, Sangkeun Ha, Deogbae Lee and Jwakyung Sung*
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P4-482 **Effects of Fresh Cattle Manure on Yield and Feed Value of Forage Crop in Hwaong Reclaimed Land**
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P4-483 **Effect of application of Oil Cake on Rice Yield In Hairy Vetch-Rice Cropping System**
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P4-484 **Developing a Soil Quality Index to Assess Soil Fitness in Onion Cultivated Upland**
Yong Ho Lee[1], So Hyun Park[1], Sung Yung Yoo[1], June Young Park[1], Kyeong Mi Choi[2], Su Min Hwang[1], A Ram Kim[1], Min Ju Lee[1], Pil Kyun Jung[3] and Tae Wan Kim[1]*
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P4-485 **Deep Planting and Excess Soil Cover on Rootstock Promote Scion Root Outbreak in 'shiranuhi' Mandarin**
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P4-486 **Improvement of Soil Water Condition for Soybean (glycine Max L.) by Inter-Row Stripe Tillage**
Jong-Ho Seo
National Institute of Crop Science, Korea

P4-487 **Effects of Cover Crops and Fertilization on Corn Productivity under No-Tillage System**
Jong-Seo Choi*, Min-Tae Kim, Jin-Hee Ryu, Sukjin Kim, Kwang Seop Kim, Yi-Hoon Park, Yong-Hwan Lee, Choon-Woo Lee, Ki-Do Park and Hang-Won Kang
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P4-488 **Coal Combustion Products (ccps)- Amended in Paddy Soil for Improvement Soil Fertility and Rice Productivity**
Jae E. Yang[1]*, Se Jin Oh[1], Seung Min Oh[1], Yong Sik Ok[1], Sung Chul Kim[2] and and Su-Jung Kim[3]
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P4-489 **Effects of Seeding Time of Green Manure Crops with Liquid Pig Manure on Rice Growth and Yield**
Ju Dong Yang[1], Dong Cheol Seo[1], Se Won Kang[1], Ju Wang Park[1], Young Jin Seo[1], Sang Gyu Lee[1], Jong Soo Heo[2] and Ju Sik Cho[1]*
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P4-490 **Effect of Carrot-Green Manure Crop Rotation for Improving Carrot Quality and Yield**
Seong-Heon Kim[1], Jong-Hwan Park[1], Dong-Cheol Seo[2], Ju-Sik Cho[2] and Jong-Soo Heo[1]*
[1] GyeongSang National University, Korea; [2] Sunchon National University, Korea

P4-491 **Self-Diffusible Silicate Fertilizer Development for Paddy Field in Korea**
Jin Ho Joo[1], Y. S. Jung[1]*, H. S. Na[2], C. W. Jo[2] and C.K. Kim[2]
[1] Kangwon National University, Korea; [2] Nubo Ltd., Korea

P4-492 **Silicon Mediated Different Roles in Alleviation of Cadmium Toxicity in Two Cypress Varieties**
Bin Guo, Wenhao An, Nengfei Ding, Chen Liu, Qinglin Fu, Hua Li, Ningyu Li and Yicheng Lin
Zhejiang Academy of Agricultural Sciences, China

P4-493 **Chlorophyll Content Estimation from Spad, Chlorophyll Fluorescence and Leaf Reflectance Properties**
Wenhao An, Hua Xiao and Alin Shen
Zhejiang Academy of Agricultural Sciences, China

C3.4-1: Design and Performance of Cover Systems for Landfills and Contaminated Sites

Soil Art *Featured artist: Aviva Rahmani, USA, avivarahmani.com*

P4-494 *(Moved to O86-5)* **Reinforcement and Ductility Effect of Plant Fine Roots on the Soil**
Yunyan Zhou and Kun Xu
China University of Geosciences, China

P4-495 **Impact of Pesticide Mixture on Ryegrass (Iolium Perenne) Cover in a Biopurification System with Andisol of Southern Chile**
Maria Cristina Diez*, Cynthia Urrutia and Felipe Gallardo
Universidad de La Frontera, Chile

P4-496 **Pesticide Degradation in a Full Scale Biopurification System in the South of Chile**
Maria Cristina Diez*, Felipe Gallardo and Sebastian Elgueta
Universidad de La Frontera, Chile

C4.5-2: Cultural Perspectives on Soils and Soil Science

Soil Art *Featured artist: Patrick Lydon & Suhee Kang, USA and Korea, www.finalstraw.org*

P4-497 **Observations on the Relationship of Soil And Land Utilization in Settlement of Eastern United States along the Fall Line**
Maxine Levin
Natural Resources Conservation Service, USA

P4-498 **The Restructure and Reorganization of the USDA Natural Resources Conservation Service Soil Science Division**
David Smith, Micheal Golden, Jon Hempel and Roy Vick
USDA, Natural Resources Conservation Service, USA

P4-499 **Soil-Landscape as a Tool in Planning and Management of the City**
Wybe Kuitert*
Seoul National University, South Korea, Netherlands

P4-500 **The Final Straw: The Merging of Soil and Society through the Arts**
Patrick Lydon[1] and Suhee Kang[2]
[1] FinalStraw.org, USA; [2] FinalStraw.org, Korea

P4-501 **Pathways Towards an Integral-Informed Soil Homeostasis**
Sabine Grunwald*
University of Florida, USA

P4-502 **Vulnerability Assessment to Soil Contamination Considering Socio-Economic Response Capability**
Youngju Kim*, Jaehoon Kim and Sang-Il Hwang
Korea Environment Institute, Korea

WG5: Mitigating Greenhouse Gas Emissions from Rice Paddy Soils

P4-503 **System of Rice Intensification (sri) in Japan Needs More Careful Water Management Practices**
Kosuke Noborio
Meiji University, Japan

P4-504 **Decreasing Global Greenhouse Effects by Biochar Amendment in a Double Rice Field of South China**
Xiaobo Qin, Yu'e Li and Yunfan Wan
Institute of Environment and Sustainable Development in Agriculture, China

P4-505 **Rice Community Base Production and Ghg Reduction in the Mekong Delta, Viet Nam: a Case Study in an Giang, Kien Giang Provinces**
Nguyen Ngoc Son
Can Tho University, Viet Nam

P4-506 **Rice Straw and Nitrate Content Control Nitrous Oxide Emission in a Flooded Paddy Soil**
Leandro Souza Da Silva[1]*, Andre Carlos Cruz Copetti[2], Gerson Laerson Drescher[1] and Eduardo Augusto Muller[1]
[1] Federal University of Santa Maria, Brazil; [2] Federal University of Pampa, Brazil

P4-507 **Comparison on the Methane Emission from Different Cropping Seasons of Paddy Rice in Central Taiwan**
Chiling Chen[1]*, Jeng-Lin Tsai[2], Pu-Jie Feng[2], Cheng-Hsiao Cheng[2], Chong-Yi Liao[1], Ben-Jei Tsuang[2] and Ping-Yu Wu[1]
[1] Taiwan Agricultural Research Institute, Taiwan; [2] National Chung Hsing University, Taiwan

P4-508 **Fluxes of Methane and Nitrous Oxide in Water-Saving Rice Production from Eastern India**
Tapan Kumar Adhya[1]*, Suvendu Das[2] and Padmini Swain[3]
[1] Indian Nitrogen Group, India; [2] National Cheng Kung University, Taiwan; [3] Central Rice Research Institute, India

P4-509 **A Combined Net Economic and Environmental Benefit with Greenhouse Gas Intensity Evaluation of Three Rice-Cropping Systems in the Taihu Lake Region of China**
Longlong Xia and Xiaoyuan Yan*
Chinese Academy of Sciences, China

P4-510 **Mitigating Greenhouse Gas Emission from Vietnam Rice Paddy Soils**
Ha Phamquang*
Environmental Chemistry, Institute for Agricultural Environment (IAE), Vietnam Academy of Agriculture Sciences (VAAS), Vetnam

P4-511 **Soil Controlling Factors of Ch4 Gas Production from Flooded Paddy Soils of Central Java**
Prihasto Setyanto[1]*, Rosenani A.B.[2] and A.K. Makarim[1]
[1] Indonesia Agricultural Environment Research Institute, Indonesia; [2] Universiti Putra Malaysia, Malaysia

P4-512 **Methanogenesis Affected by the Co-Occurrence of Iron(iii) Oxides and Humic Substances**
Li Zhuang and Shungui Zhou
Guangdong Institute of Eco-Environmental and Soil Sciences, China

P4-513 **Greenhouses Gas Production from Different Soil Types and Water Managements under Defined Laboratory Condition**
Helena Lina Susilawati and Kazuyuki Inubushi*
Chiba University, Japan

P4-514 **Effect of Bacterial Material on Straw Decomposition and Greenhouse Gas Emission from Paddy Soil**
Shunsuke Hanazawa, Maasa Takahashi and Kazuyuki Inubushi
Chiba University, Japan

P4-515 **The Effects of Dolomite Addition on N2O Emission from Acidic Soil**
Muhammad Shaaban*, Ronggui Hu*, Qian Peng, Shan Lin and Jinsong Zhao
Huazhong Agricultural University, China

P4-516 **Effect of Nitrification Inhibitors on Yield and Green House Gas Emissions in Rice**
Ravi P[1], Jayasree G[1]*, Pratibha G[2], Balaguravaiah D[1], Praveen Rao V[1], Venkateswarlu B[2] and Rao P. C[1]
[1] Acharya NG Ranga Agricultural University,India; [2] CRIDA, India

P4-517 **Potential of Chelating Compounds Like Edta to Mitigate Methane Emission from Rice Paddy Soils**
Prabhat Pramanik[1]* and Pil Joo Kim[2]
[1] Tocklai Experimental Station, India; [2] Gyeongsang National University, Korea

P4-518 **Effects of Liquid Pig Manure Application on the Emission of Ch4 in a Paddy Soil**
Se-Won Kim*, Jun-Keun Choi, Young-Moon Mo, Young-Ho Seo and Moon-Sub Ahn
Gangwondo Agricultural Research & Extension Services, Korea

WG8: Proximal Soil Sensing

Soil Art *Featured artist: Ulrike Arnold, Germany, www.ulrikearnold.com*

P4-519 **Soil Information System of Infrared Mid-Infrared Photoacoustic Spectroscopy**
Du Changwen* and Zhou Jianmin
Institute of Soil Science Chinese Academy of Sciences, China

P4-520 **Adequacy of a Lower Cost Spectrometer for Prediction of Soil Particle Size Distribution**
Alexandre Ten Caten[1]*, Ricardo Simao Diniz Dalmolin[2], Jean Bueno[3], Andre Dotto[2], Jose Lucas Safanelli[3] and Walquiria

Chaves Silva[3]
[1] Universidade Federal de Santa Catarina campus Curitibanos, Brazil; [2] Univerisdade Federal de Santa Maria, Brazil; [3] Universidade Federal de Santa Catarina, Brazil

P4-521 **Synchronization Prediction Model of Soil Water-Salt Based on Hyperspectral Reflectance Characteristics**
Haijiang Wang, Hualing Zhang, Shaotin Ren and Baoguo Li*
China Agricultural University, China

P4-522 **Mobile Multisensor Platform for Field Scale Soil Properties Mapping**
Maria Knadel, Anton Thomsen, Kirsten Schelde and Mogens H. Greve
Aarhus University, Denmark

P4-523 **Soil Pit Descriptions for the Contemporary Field Soil Scientist: Harnessing the New Soil Analytical Technologies**
Brendan Malone*, Alex Mcbratney and Budiman Minasny
The University of Sydney, Australia

P4-524 **Predicting Soil Organic Carbon Contents in Archived Soils Using Mid-Infrared Spectroscopy**
Senani Karunaratne[1], Thomas Bishop[1]*, Jeff Baldock[2], Bruce Hawke[2] and Inakwu Odeh[1]
[1] The University of Sydney, Australia; [2] CSIRO Land and Water, Australia

P4-525 **Transfer Functions for Visnir Spectra: Application of Air-Dry Spectral Libraries to Moist and Intact Soils**
Jason Ackerson[1]*, Cristine Morgan[1], Yufeng Ge[1], Budiman Minasny[2] and Alex Mcbratney[2]
[1] Texas A&M University, USA; [2] EUniversity of Sydney, Australia

P4-526 **How Does Soil Moisture Effect the In-Field Prediction of Soil Properties from X-Ray Fluorescence (XRF) Spectra?**
Ho Jun Jang, Budiman Minasny* and Uta Stockmann*
The University of Sydney, Australia

P4-527 **Transferability of a Visible and Near-Infrared Model for Soil Organic Matter Estimation in Riparian Landscapes**
Yaolin Liu[1], Qinghu Jiang[1], Teng Fei[1], Junjie Wang[1], Tiezhu Shi[1], Kai Guo[1], Xiran Li[2] and Yiyun Chen[1]*
[1] Wuhan University, China; [2] Peking University, China

P4-528 **Prediction of Soil Nitrogen at the Chinese Scale by Visible and near Infrared Reflectance Spectroscopy**
Shuo Li, Qianlong Wang and Zhou Shi*
Zhejiang University, China

P4-529 **Using Visible-Near Infrared Spectroscopy to Predict Some Soil Properties in a Semi-Arid Region of Iran**
Ebrahim Babaeian[1]*, Mehdi Homaee[1] and Ali Akbar Norouzi[2]
[1] Tarbiat Modares University, Iran; [2] Soil Conservation and Watershed Management Research Institute (SCWMRI), Iran

P4-530 **Unravelling the Research Gaps in Technology Based Soil Inference Systems**
Kanika Singh*, Budiman Minasny and Alex Mcbratney
University of Sydney, Australia

P4-531 **Predicting Organic Carbon Content of Canadian Prairie Soils Using Vis-Nir Spectroscopy: A Comparison of Pretreatment and Validation Methods**
Bing Si and Wei Hu
University of Sasaktchewan, Canada

P4-532 **Potential of Soil Proximal Sensing for Mapping of Key Soil Features of an Alfisol in Sri Lanka**
Udaya W. A. Vitharana[1]*, E M S K Thilakarathna[1], Ann Verdoodt[2], Marc Van Meirvenne[2], Timothy Saey[2], B L W K Balasooriya[1] and R.A. C. J. Perera[1]
[1] University of Peradeniya, Sri Lanka; [2] Ghent University, Belgium

P4-533 **Soil Water Content Estimation Using Visible and Near Infrared Spectroscopy**
Youssef Fouad[1]*, Didier Michot[1], Zahra Thomas[1] and Raphael Viscarra Rossel[2]
[1] Agrocampus Ouest - INRA, UMR SAS, France; [2] CSIRO Land and Water, Australia

P4-534 **Apparent Electrical Conductivity (eca) Based Potential Management Zones for Site Specific Nutrient Management in Paddy Soils of Sri Lanka**
Wajira K Balasooriya[1]*, R A A S Rathnayaka[1], Udaya W. A. Vitharana[1], E M S K Thilakarathna[1], Ann Verdoodt[2], Timothy Saey[2] and Marc Van Meirvenne[2]
[1] University of Peradeniya, Sri Lanka; [2] Ghent University, Belgium

P4-535 **Estimation of Soil Organic Carbon in Indian and Australian Soils Using Reflectance Spectroscopy**
Sarathjith M.C[1]* and Kanika Singh[2]
[1] Indian Institute of Technology Kharagpur, India; [2] University of Sydney, Australia

P4-536 **How Much Can We Reduce the Number of Calibration Samples?**
Guillaume Debaene* and Jacek Niedzwiecki
Institute of Soil Science and Plant Cultivation - State Research Institute, Poland

P4-537 **Scope to Predict Soil Properties at Within-Field Scale from Small Samples Using Proximally Sensed Data**
John Triantafilis*
School of BEES, UNSW, Australia

P4-539 **Identification of WRB Soil Classification Units from Vis-Nir Spectral Signatures**
Adam Csorba[1], Vince Lang[1], Laszlo Fenyvesi[2] and Erika Micheli[1]*
[1] Szent Istvan University, Hungary; [2] Hungarian Institute of Agricultural Engineering, Hungary

P4-540 **Potential of Using Portable X-Ray Fluorescence Spectroscopy XRF for Assessing Plant Nutrients in Soils**
Robin Gebbers* and Michael Schirrmann
Leibniz-Institute for Agricultural Engineering, Germany

WG11: Soil Information Exchange Standards and Systems

Soil Art *Featured artist: Gerd Wessolek, Technische Universität Berlin, Dept. Soil Protection, http://soilarts.wordpress.com/category/field-experiments*

P4-541 **An Australian-New Zealand Standard For Exchange of Soil and Landscape Data: Anzsoilml V2.0**
Bruce Simons[1]*, Peter Wilson[1], Alistair Ritchie[2], David Jacquier[1] and Jamie Vleeshouer[1]
[1] Land and Water, CSIRO, Australia; [2] Landcare Research - Manaaki Whenua, New Zealand

P4-542 **Standardising Cosmoz Probe Based Soil Moisture Measurements**
Ritaban Dutta[1]*, Ahsan Morshed[1], Yanfeng Shu[1]* and Jagannath Aryal[2]
[1] CSIRO, Australia; [2] University of Tasmania, Australia

P4-543 **Making Apsim Open Data Driven**
Ahsan Morshed*, Yanfeng Shu* and Ritaban Dutta
CSIRO, Australia

P4-544 **Global Soil Information Facilities: Towards a Soil-Wiki**
Tomislav Hengl
ISRIC, Netherlands

P4-545 **Reflections on the Implementation of Anzsoilml in Queensland**
Daniel Brough[1]*, Kelly Bryant[1] and Ross Searle[2]
[1] Department of Science, Information Technology, Innovation and the Arts, Australia; [2] CSIRO, Australia

WG13: Progress in Digital Soil Mapping and Global Soil Map

Soil Art *Featured artist: Alexandra Toland, Technische Universität Berlin, Dept. Soil Protection, www.artoland.com, www.soilarts.org*

P4-546 **Challenges and Potential Solutions to Quantifying Soil Property Predictions Uncertainty for the Globalsoilmap Using Legacy Data (US and Llanos Orientales, South America Case Studies)**
Zamir Libohova[1]*, Nathan Odgers[2], Jenette Ashtekar[3], Robert Brown[3], Phillip Owens[3], Mayesse Silva[3] and Minerva Dorantes[3]
[1] United States Department of Agriculture, Natural Resources Conservation Servise, USA; [2] The University of Sydney, Australia; [3] Purdue University, USA

P4-547 **Comparison of Aggregation Ways on Soil Property Maps**
Wei Shangguan*, Yongjiu Dai, Duoying Ji, Hua Yuan2, Qian Zhang and Lili Wang
Beijing Normal University, China

P4-548 **Mapping Soil-Landscape Features Using Image Object Analysis as a Spatial Framework for Soil Attribute Analysis and Communication**
Peter Wilson* and Linda Gregory
Commonwealth Scientific and Industrial Research Organisation, Australia

P4-549 **Mapping and Updating Soil Series Using Random Forest and Conditioned Latin Hypercube Sampling in the Loess Soils of Northern Iran**
Mohammad Reza Pahlavan Rad[1]*, Norair Toomanian[2], Farhad Khormali[3], Colby W. Brungard[4], Bayram Komaki[5], Hassan Azarmdel[5] and Patrick Bogaert[6]
[1] Gorgan University of Agricultural Sciences and Natural Resources/Agriculture and Natural Resources Research center of Sistan, Iran; [2] Agricultural and Natural Resources Research Center of Isfahan, Iran; [3] Gorgan University of Agricultural Sciences and Natural Resources, Iran; [4] Utah State University, USA; [5] Gorgan University of Agricultural Sciences and Natural Resources, Iran; [6] Universte Catholique de, Belgium

P4-550 **Spatial Representation of Soil Properties in Earth System Models**
Umakant Mishra[1]*, Julie Jastrow[1], Roser Matamala[1], Zhaosheng Fan[1], William Riley[2], Beth Drewniak[1] and John Krummel[1]
[1] Argonne National Laboratory, USA; [2] Lawrence Berkeley National Laboratory, USA

P4-551 **Australia's Globalsoilmap - The System and its Components**
Mike Grundy[1]*, Ross Searle[1], Raphael Viscarra Rossel[1], Karen Holmes[2], Nathan Odgers[3], David Clifford[1], Alex Mcbratney[3], Budiman Minasny[3], John Wilford[4] and Mark Thomas[1]
[1] CSIRO, Australia; [2] Department of Agriculture and Food, Australia; [3] University of Sydney, Australia; [4] Geoscience Australia, Australia

P4-552 *(Moved to O82-10)* **Application of Spatial Simulated Annealing Method on a Soil Sampling Scheme in the Road Surrounding Region**
Wei Huangwei* and Zongwei Han
Huazhong Agricultural University, China

P4-553 **Spatial Prediction of Soil Variables Based on Primary Terrain Attributes in a Gentle Area**
Xiaodong Song, Ganlin Zhang* and Feng Liu
Chinese Academy of Sciences, China

P4-554 **Alpha Beta Gamma of Radiometrics for Enhancing Digital Soil Mapping**
Gregory Rouze[1], Cristine Morgan[1]* and Alex Mcbratney[2]
[1] Texas A&M University, USA; [2] University of Sydney, Australia

P4-555 **A New Digital Soil Resource for Tasmania, Australia**
Darren Kidd[1]*, Brendan Malone[2], Alex Mcbratney[2], Budiman Minasny[2], Nathan Odgers[2], Mathew Webb[1] and Ross Searle[3]
[1] University of Sydney/ Dept. of Primary Industries Parks Water & Environment, Australia; [2] University of Sydney, Australia; [3] CSIRO, Australia

P4-556 **Evaluating Soils for Rural and Agricultural Development: Putting Human Face on Soil Survey and Mapping for Sustained Ecosystem Services in Mosiro, Kajido County, Kenya**
Edward Muya*
Kenya Agricultural Research Institute, Kenya Soil Survey, Kenya

P4-557 *(Moved to O82-9)* **Spatial Distribution of Soil Organic Carbon in Southern Greenland Assessed Following the Globalsoilmap.net Specifications**
Søren Munch Kristiansen[1]*, Kabindra Adhikari[2], Lis Wollesen De Jonge[1] and Mogens Humlekrog Greve[1]
[1] Aarhus University, Denmark; [2] University of Wisconsin-Madison, USA

P4-558 **Using Time-Series Covariates to Improve Predictions of Subsoil Properties**
Thomas Bishop[1]*, Ana Horta[1] and Matthew Pringle[2]
[1] The University of Sydney, Australia; [2] DSITIA, Queensland Government, Australia

P4-559 **Ensemble Model to Predict the Available Water Capacity of Australian Soils**
José Padarian[1]*, Budiman Minasny[1], Alex Mcbratney[1] and Neal Dalgliesh[2]
[1] The University of Sydney, Australia; [2] CSIRO Ecosystem Sciences, Australia

P4-560 **Artificial Neural Network for Mapping and Mitigation-Orientated Characterization of Acid Sulfate Soils: Application to Sirppujoki River Catchment, South-Western Finland**
Amelie Beucher[1]*, Richard Siemssen[1], Soren Frojdo[1], Peter Osterholm[1], Annu Martinkauppi[2] and Peter Eden[2]
[1] Abo Akademi University, Finland; [2] Geological Survey of Finland, Finland

P4-561 **Digital Soil Mapping in Regional Agricultural Resource Assessment**
Mark Thomas[1]*, David Clifford[1], Rebecca Bartley[1], Daniel Brough[2], Philip Seonaid[1], Linda Gregory[1] and Mark Glover[1]
[1] CSIRO, Australia; [2] Government of Queensland, Australia

P4-562 **Prediction Interval Analysis of Clay, Soil Organic Carbon, and Ph for Globalsoilmap from Statsgo2, Ssurgo, and Disaggregated Ssurgo Data in West Virginia, USA**
Travis Nauman*, Jordan Helmick and James Thompson
West Virginia University, USA

P4-563 **Pedoecological Mapping to Improve Forest Management**
Travis Nauman[1]*, James Thompson[1], James 'skip' Bell[2] and Jason Teets[2]
[1] West Virginia University, USA; [2] USDA Natural Resources Conservation Service, USA

P4-564 **Soils in the Soyang Lake Watershed: Soil Sampling Design and Early Soil Description**
Oeverdieck, Hannes; Jeong, Gwan Yong; Liess, Mareike; Huwe, Bernd
University Bayreuth, Germany

P4-565 **A Novel Approach for Validating Digital Soil Datasets with Categorical Data**
Endre Dobos[1]*, Erika Micheli[2], Diana Bertoti[1], Vince Lang[2] and Karoly Kovacs[1]
[1] University of Miskolc, Hungary; [2] Szent Istvan University, Hungary

P4-566 **The Utilization of Empirical Knowledge in Digital Soil Mapping**
Borut Vrscaj
Agricultural Institute of Slovenia, Slovenia

P4-567 **Digital, Optimized, Soil Related Maps and Information in Hungary; Dosoremi.hu**
Endre Dobos[1], Laszlo Pasztor[2]*, Jozsef Szabo[2], Zsofia Bakacsi[2], Annamaria Laborczi[2], Katalin Takacs[2] and Gabor Szatmari[3]
[1] University of Miskolc, Hungary; [2] Hungarian Academy of Sciences, Hungary; [3] University of Szeged, Hungary

P4-568 **An Approach to Help Formalizing the Purposive Sampling Strategy of Classical Soil Surveys**
Alessandro Samuel-Rosa[1]*, Lucia H C Anjos[1] and Gustavo M Vasques[2]
[1] Federal Rural University of Rio de Janeiro, Brazil; [2] Brazilian Agricultural Research Corporation, Brazil

P4-569 **Building Digital Soil Maps of Canadian Managed Forests at 250 M of Resolution Using the K-Nearest Neighbour Method**
Mansuy Nicolas*
Natural Resources Canada / Canadian Forest Service, Canada

P4-570 **Changes in Soil Properties in the Agricultural Fields of Korea**
Suk Young Hong[1]*, Budiman Minasny[2], Alex Mcbratney[2], Yi-Hyun Kim[1], Kyoung-Do Lee[1] and Sang-Il Na[1]
[1] RDA, Korea; [2] The University of Sydney, Australia

P4-571 **Soil Organic Carbon Sequestration Rates under Crop Sequence Diversity, Bio-Covers, and No-Tillage**
Amanda Ashworth
University of Tennessee, USA