

FIRST JOINT MEETING ON SOIL AND PLANT SYSTEM SCIENCES (SPSS 2019)

Natural and Human-induced
Impacts on the Critical Zone and
Food Production

CIHEAM BARI, ITALY
23-26 SEPTEMBER 2019

In collaboration with



NATURAL
ORGANIC
MATTER
RESEARCH



Organized by

FIRST JOINT MEETING ON SOIL AND PLANT SYSTEM SCIENCES (SPSS 2019)

“Natural and Human-induced Impacts
on the Critical Zone and Food Production”

ORGANIZED BY

Società Italiana di Chimica Agraria (SICA)
Società Italiana di Pedologia (SIPe)
Società Italiana della Scienza del Suolo (SISS)



IN COLLABORATION WITH

CIHEAM Bari, Valenzano (Bari)
International Humic Substances Society (IHSS)



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Bari, Italy • 23-26 September 2019

WELCOME TO SPSS 2019



On behalf of the Organizing and Scientific Committees, we are glad to invite you to the First Joint Meeting on **Soil and Plant System Sciences (SPSS 2019)** organized by the Italian Society of Agricultural Chemistry (SICA), the Italian Society of Pedology (SIPe) and the Italian Society of Soil Science (SISS), in collaboration with the Mediterranean Agronomic Institute (IAM) and the Italian Chapter of the International Humic Substances Society. The Meeting will be held next **23-26 September 2019** at the CIHEAM Bari Campus in Valenzano (Bari, Italy).

The title of this meeting “*Natural and Human-induced Impacts on the Critical Zone and Food Production*” sets up the ambitious goal of integrating scientific backgrounds and topics, all focused on the “critical zone” (where soil and living organisms interact) but starting from differing theoretical perspectives and applied approaches. Physical, chemical and biological characteristics and processes will feed and nourish the diversity of experiences, opinions and scientific knowledge. **SPSS 2019** aims to gather thoughts and findings of scientists coming from the scientific societies and the institutions involved in research approaches to the critical zone. Scientists, professionals and individuals interested in these fields of science are warmly invited to attend this Conference, to bring their knowledge or their doubts, thus contributing to create a permanent forum of stimulating scientific debates.

We strongly believe in scientific and human contamination and we want to contribute to organize with you an interesting and productive occasion for sharing enthusiasm, passion and engagement in the scientific work in a lively and nice location of southern Italy.

The scientific program is structured into 5 sessions, distributed during 4 days which also include a scientific and cultural excursion and social events.

You are kindly invited to attend the scientific meeting and the excursion but also to enjoy a few days in Bari in September 2019.

Teodoro Miano, University of Bari Aldo Moro, Bari (*Chair, SICA President*)

Giuseppe Corti, Polytechnic University of Marche, Ancona (*SIPe President*)

Paola Adamo, University of Napoli Federico II, Napoli (*SISS President*)

Claudio Zaccone, University of Foggia, Foggia (*Secretary*)

PROGRAMME

Monday, September 23

9:00-13:00 **Registration**

13:00-14:00 **Light lunch**

14:00-14:30 **Opening Ceremony**

SESSION I: Natural and agricultural soil systems

Chairs: Tommaso Chiti and Antonio Gelsomino

Invited speaker

14:30-15:15 **Takashi Kosaki**. *President, International Union of Soil Sciences (IUSS).*
Harmonization of natural and agricultural soil systems for sustaining society

15:15-15:30 **Antonello Bonfante, A. Basile, J. Bouma**
Exploring the effect of varying soil organic matter contents on current and future moisture supply capacities of six Italian soils

15:30-15:45 **Ronen C.A. Francis, M.N. Wuddivira, G.A. Gouveia, D. Bramble**
Structural and hydraulic feedbacks in humid tropical soils amended with aglime and organic residues

15:45-16:00 **G. Brunetti, Francesco De Mastro, A. Traversa, F. Nigro, C. Cocozza**
Impact of different soil management on soil microbial community

16:00-16:30 **Coffee break**

16:30-16:45 **Andrea Ciurli, D. Segal, G. Renella, L. Giagnoni, R. Pastorelli, A. Zamboni, Z. Varanini**
FePO₄ nanoparticles as a source of nutrients: effects on plant transcriptome and on soil microbial communities and functions

16:45-17:00 **Eleonora Grilli, M. Bastidas, M. Bijl, S. Carvalho, E. Coppola, T. La Mantia, C.A.R. Machado, M. Mastrocicco, M. Rossana, F. Pulido, M.J. Roxo, F.A. Rutigliano, P. Quatrini, A. Sarmiento, S. Castaldi**
Drivers of soil quality in agro-ecosystems and managed forested lands of Mediterranean areas under increasing climatic risk

17:00-17:15 **Simone Priori, R. Barbetti, L. Meini, A. Morelli, A. Zampolli, L. D'Avino**
Field scale economic land evaluation based on spatial variability of soil functions

17:15-18:00 **Poster presentations (Session I)**

18:00-19:00 **General Assembly (SISS)**



PROGRAMME

Tuesday, 24 September

8:30-18:00 *Pedological and cultural excursion*

18:30-19:30 **General Assembly (SIPe)**

Wednesday, 25 September

SESSION II: Soil pollution and food safety

Chairs: Valeria Ancona and Paola Castaldi

Invited speaker

9:00-9:45

Fabio Terribile *University of Naples "Federico II", Italy*

An operational tool to challenge land take at the European scale

9:45-10:00

Antonio G. Caporale, P. Adamo

In vitro bioaccessibility of potentially toxic elements in particle-size fractions from an industrial soil of south Italy

10:00-10:15

Erika Di Iorio, L. Circelli, C. Colombo, A. Paltseva, M. Deeb, Z. Cheng

Use of Vis-NIR Spectroscopy to predict the impact of different amendments on Pb and As bioaccessibility in urban soils

10:15-10:30

Albert Kobina Mensah, B. Marschner, S.M. Shaheen, J. Rinklebe

Arsenic in an abandoned gold mine spoil in Ghana: effects of pH, geochemical fractionation and potential mobilisation

10:30-11:00

Coffee break

11:00-11:15

Elio Padoan, A.H. Couto, F. Ajmone Marsan

Potential release of zinc and cadmium in soils contaminated by heavy metals under flooding

11:15-11:30

Giovanni Garau, A. Porceddu, B. Manunza, P. Castaldi

Municipal solid wastes as gentle remediation options for the (bio)chemical recovery of As and trace metal-polluted soils

11:30-11:45

Tommy Pepè Sciarria, S. Zangarini, L. Trombino, F. Adani, F. Tambone

Phosphorus recovery from liquid fraction of digestates by struvite crystallization

11:45-12:45

Poster presentations (Sessions II and III)

12:45-14:00

Lunch



PROGRAMME

Wednesday, 25 September

SESSION III: Organic amendments and soil quality

Chairs: Paloma Campos and Claudio Cocozza

Invited speaker

- 14:00-14:45** **José María García-Mina Freire** *Vice President, International Humic Substances Society (IHSS)*
Discriminating the action of root applied-and foliar applied-humic acid on plant growth
- 14:45-15:00** **María Teresa Cieschi, M. Caballero-Molada, I.V. Perminova, J.J. Lucena**
Are iron humates slow iron release fertilizers?
- 15:00-15:15** **Massimo Zilio, F. Tambone, F. Bedussi, F. Adani**
Environmental impact of the use of digestates in agriculture: an open field approach
- 15:15-15:30** **Daniela Pezzolla, L. Regni, P. Proietti, E. Albertini, S. Ciancaleoni, G. Marozzi, G. Gigliotti**
Agronomic reuse of olive wastewater and changes on soil chemical properties and microbial community
- 15.30-16.00** *Coffee break*
- 16:00-16:15** **A. Ioppolo, Armando V. Laudicina, L. Badalucco, A. Micalizzi, F. Saiano, E. Palazzolo**
Citrus hydrolates as natural biostimulants of soil microorganisms
- 16:15-16:30** **Beatrice Giannetta, R. Balint, D. Said-Pullicino, C. Plaza, M. Martin, C. Zaccone**
Redox-driven mineralogical changes in Fe (hydr)oxides across particle-size SOM fractions
- 16:30-16:45** **Mariia Pukalchik, O. Yakimenko, K. Kydraliev, V. Terekhova**
Artificial intelligence approach to predict changes in biological properties of the heavy metal polluted soils after organic-based amendments addition
- 16:45-17:45** **General Assembly (SICA)**
- 18:00** *Transfer to the social dinner venue*



PROGRAMME

Thursday, 26 September

SESSION VI: Plant responses to natural and human-induced drivers

Chairs: Ivana Cavoski and Andrea Ertani

Invited speaker

9:00-9:45

Philip J. White, Programme Leader, The James Hutton Institute
Improving Nutrient Acquisition by Plants from the Soil

9:45-10:00

Fabrizio Araniti, M.R. Abenavoli

Metabolic changes induced by *Cuscuta campestris* Yunck. on the host species *Artemisia campestris* subsp. *variabilis* (ten.) Greuter as a strategy to increase the parasitization success

10:00-10:15

A. Mannucci, L. Mariotti, Antonella Castagna, M.F. Quartacci, A. Trivellini, A. Mensuali-Sodi, A. Ranieri

Hormone responses to UV-B irradiation: what happens in leaves and roots of tomato plants?

10:15-10:30

Emilia Dell'Aversana, M. van Oosten, A. Maggio, P. Woodrow, P. Carillo, G.M. Fusco

Omeprazole enhances NUE through increased nitrogen uptake and assimilation in corn

10.30-11.00

Coffee break

11:00-11:15

Begoña Miras-Moreno, G. Colla, Y. Rouphael, M. Cardarelli, M. Trevisan, L. Lucini

Defining the active biostimulant fractions of a plant-derived protein hydrolysate using an integrated molecular fractionation and metabolomics approach

11:15-11:30

Bhakti Prinsi, L. Brancadoro, O. Failla, L. Espen

Proteomic changes in the roots of three grapevine rootstocks in response to nitrate availability

16:30-16:45

L. Zanin, S. Gottardi, W. Biła, R. de Brito Francisco, S. Venuti, F. Valentinuzzi, T. Mimmo, S. Cesco, B. Bassin, M. Jasiński, E. Martinoia, R. Pinton, Nicola Tomasi

Identification of an isoflavonoid transporter required for the nodule establishment of the *Rhizobium-Fabaceae* symbiotic interaction

11:45-12:45

Poster presentations (Poster presentations (Sessions IV and V))

12:45-14:00

Lunch



PROGRAMME

Thursday, 26 September

SESSION V: Frontiers in plant and soil sciences

Chairs: Silvia Celletti and Daniel Said Pullicino



Invited speaker

- 14:00-14:45** **Yiannis Deligiannakis**, *President, International Humic Substances Society (IHSS)*
Humic-nanomaterials hybrids as fertiliser-delivery technology and antioxidants
- 14:45-15:00** **Pellegrino Conte**
Applications of fast field cycling NMR relaxometry in soil science
- 15:00-15:15** **Leonard Barnabas Ebinezer, G. Arrigoni, S. Trevisan, A. Manoli, P. Carletti, C. Francheschi, S. Quaggiotti, A. Masi**
Unravelling the stimulatory mechanism of APR - a novel Biostimulant: Leveraging transcriptomics and proteomics
- 15:15-15:30** **Ignazio Allegretta, S. Legrand, M. Alfeld, C.E. Gattullo, M. Spagnuolo, K. Janssens, R. Terzano**
Classification of soil aggregates using SEM-EDX hyperspectral data analysis
- 15.30-16.00** *Coffee break*
- 16:00-16:15** **L. Beneduce, C. Plaza, Claudio Zaccone**
Does physical fractionation of SOM pools preserve information about microbial taxa distribution and ecological functions?
- 16:15-16:30** **Maria Chiara Guerrieri, M. Trevisan, Edoardo Puglisi**
Isolation and phenotypic characterization of extracellular PGPR from tomato plant rhizosphere samples
- 16:30-16:45** **Simona Vingiani, P. Adamo, A. G. Caporale, S. De Pascale, L. G. Duri, M. Palladino, A. Pannico, Y. Roupheal**
Sustainable space agriculture using MMS1 Martian soil simulant and compost
- 16:45** **Closing ceremony**

CONFERENCE VENUE



The #SPSS2019 meeting will be held at
CIHEAM Bari
Via Ceglie 9, 70010 VALENZANO (Bari) - Italy

How to reach **CIHEAM Bari**



www.iamb.ciheam.org

How to get there

By car

From the motorway take the Bari Nord exit and follow the signs to the ring road (Tangenziale), towards Brindisi-Lecce. On the ring road, take exit N. 13B towards Taranto (S.S.100), after about 4 Km turn right towards Valenzano, at the Capurso-Valenzano exit. At Valenzano, turn right at the first roundabout towards Bari. At the third roundabout turn left towards Ceglie. CIHEAM Bari is 500 m ahead on the right.

By train

From Bari Central Station:

- take a Taxi. CIHEAM Bari has an agreement with taxi companies "NUOVA CO.TA.BA." and "APULIA TAXI".
- catch bus N. 4 from the nearest stop (Corso Cavour). Its terminus is at CIHEAM Bari. Timetable .

By plane

From Bari-Palese Airport "Carol Wojtyla":

- use the new railroad from the airport ("Aerostazione" station) to Bari central station ("Bari Centrale") and then catch bus N. 4 from the nearest stop (Corso Cavour). Its terminus is at CIHEAM Bari.
- take a Taxi. CIHEAM Bari has an agreement with taxi companies "NUOVA CO.TA.BA." and "APULIA TAXI".
- use the shuttle bus service from the airport to the Bari central station and then catch bus N. 4 from the nearest stop (Corso Cavour). Its terminus is at CIHEAM Bari.

Shuttle service

A shuttle from Bari city centre (near the Petruzzelli theatre) to the conference venue will be available on September 24th, 25th and 26th

INFORMATION

Registration fees

Early registration rates are available until **10 July 2019** and can be paid by **bank transfer** (please take into account that the date of bank transfer receipt will be considered). **N.B. On site, it will be possible to pay only by cash.**

	Early bird fee (until 10 July 2019)	Standard fee (after 10 July 2019)
Regular member ¹	280 €	350 €
Regular non member	330 €	400 €
Student ²	140 €	200€
Accompanying person ³	140 €	200€

¹ Fee reserved to regular members (2019) of SICA, SIPE or SISS;

² Master or PhD students, research and fellowship project holders;

³ Fee includes: excursion, meals and coffee breaks at the Congress venue, social dinner and shuttle connections.

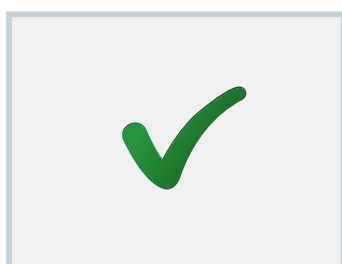
The Registration fee includes:

- access to the 4-day congress
- participant kit
- pedological and cultural excursion with guides and lunch box
- meals and coffee breaks at the Congress venue
- social dinner
- shuttle connections from downtown Bari to the venue (and return) during the meeting

Posters

When preparing your poster, please remember that its maximum size is **150 x 90 cm (width x height)**.

Correct format...



Wrong format...

PUBLICATION OF RESULTS

The best oral and poster presentations on plant- and soil-related topics will be awarded with a free-of-charge publication voucher on **Plants** (ISSN 2223-7747; www.mdpi.com/journal/plants) and **Soil Systems** (ISSN 2571-8789; www.mdpi.com/journal/soilsystems), respectively.

The Book of Abstracts, as pdf file, will be available on the SPSS web site. Two Special Issues will be also launched; authors will be invited to submit the full-length version of their works for publication in **Plants** or **Soil Systems**, two international, peer-reviewed, open access journals published monthly by MDPI.

SPONSORS



We wait for you at

#SPSS2019





NOTE

A series of horizontal gray lines spanning the width of the page, intended for writing a note.