



**SOCIETA' ITALIANA DI CHIMICA AGRARIA**

**PhD Winter School**

***Rhizosphere at work: soil-plant-microbes interactions,  
from plant nutrition to soil remediation***

**17-20 February 2014, Piacenza, Italy**

Organizing committee: Tanja Mimmo, Gian Maria Beone, Luciano Cavani, Edoardo Puglisi, Nicola Tomasi, Roberto Terzano, Marco Trevisan, Stefano Cesco, Claudio Ciavatta

*The aim of the school is to give an insight into the complex processes occurring at the soil-root interface and how these processes can be exploited to improve plant nutrition and to remediate polluted soils. In particular, lectures will focus on new innovative methodologies applied in rhizosphere research.*

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## **Preliminary scientific program**

**17 February 2014**

afternoon: arrival and registration

**15.00-15.30: Introduction of the School**

afternoon session: ***RHIZOSPHERE AND ROOT EXUDATION***

**Chair: Edoardo Puglisi** (University of Piacenza, Italy)

**15.30-16.15 Tanja Mimmo** (FaST, Free University of Bolzano, Italy) The rhizosphere - "the underground information superhighway"

**16.15-17.00 Nicola Tomasi** (DiSA, University of Udine, Italy) How are exudates released from roots?

**17.00-17.15 Break**

**17.15-18.00 Gianpiero Vigani** (DiSAA, University of Milano, Italy) Where do root exudates come from? Metabolic reprogramming under nutrient deficiency: Fe nutrition as a case study

**18:00-18:30 Team work and discussion\***: Experimental approaches to assess roots exudation and address the complexity of tripartite soil-plant-microbiota interactions in the rhizosphere\* (*under supervision of the chair*)

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**18 February 2014**

morning session **SOIL MANAGEMENT AND PLANT NUTRITION**

**Chair: Matteo Spagnuolo** (DiSSPA, University of Bari, Italy)

**9.00-9.45 Luciano Cavani** (DiSA, University of Bologna, Italy) Organic Fertilizers: impact on soil fertility

**9.45-10.30 Anita Zamboni** (DiBiotec, University of Verona, Italy) Regulation of mineral nutrition uptake in the context of root-rhizosphere relationship

**10.30-11.00 Break**

**11.00-11.45 Stefania Astolfi** (DAFNE, University of Tuscia, Italy) Sulphur in nutrient interactions

**11.45-12.30 Daniele del Buono** (DiSAA, University of Perugia, Italy) Agrochemicals: plant detoxification and interferences on vegetal nutrition

**12.30-13.00 Team work and discussion\***: Plant nutrition research: challenges to meet the need for food with a sustainable approach\* (*under supervision of the chair*)

afternoon session: **PRACTICAL SESSIONS**

**14.30-17.30 Tanja Mimmo, Markus Puschenreiter, Ilenia Cattani** Methods in Rhizosphere Research: Rhizoboxes and Rhizotest - limitations and implications

**17.30-18.30 Nicola Tomasi** How to approach a plant study in a plant-soil experimental system?

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**19 February 2014**

morning session **SOIL MICROBES AND THEIR INTERACTIONS WITH PLANTS**

**Chair: Vito Armando Laudicina** (University of Palermo, Italy)

**9.00-9.45 Youri Pii** (FaST, Free University of Bolzano, Italy) Interactions between plants and microorganisms: towards a better nutrient efficiency?

**9.45-10.30 Edoardo Puglisi** (University of Piacenza, Italy) Structure and activity of soil microbes as revealed by genomics and metagenomics approaches

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**10.30-11.00 Break**

**11.00-11.45 Davide Bulgarelli** (College of Life Science, University of Dundee, UK)  
Underground: structure, functions and host control of the microbiota thriving at the root-soil interface

**11.45-12.15 Team work and discussion\***: Molecular vs. biochemical methods to study the soil microbial community\* (*under supervision of the chair*)

**12.15-13.00 Selected presentations by PhD students**

afternoon session: **PRACTICAL SESSIONS**

**14.30-16.30 Edoardo Puglisi, Davide Bulgarelli** Digging into the numbers: from Data Count Matrix to (almost) PQ pictures using R

**16.30-18.30 Roberto Terzano, Maria Chiara Fontanella** X-ray and mass analytical methods to study micronutrients and trace element pollutants in soil and plants

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**20 February 2014**

morning session: **SOIL POLLUTION AND DECONTAMINATION**

**Chair: Gian Maria Beone** (ICAA, University of Piacenza, Italy)

**9.00-9.45 Ilenia Cattani** (ICAA, University of Piacenza, Italy) Soil contamination and bioavailability concept

**9.45-10.30 Roberto Terzano** (DiSSPA, University of Bari, Italy) Soil remediation: an overview

**10.30-11.00 Break**

**11.00-11.45 Giancarlo Renella** (DiPSA, University of Firenze, Italy) Restoration of functionality of polluted soils and sediments: evidences from the GREENLAND and CLEANSED projects

**11.45-12.30 Markus Puschenreiter** (Institute of Soil Research, BOKU University, Wien, Austria) Rhizosphere processes involved in phytoremediation of trace element-contaminated soils

**12.30-13.00 Team work and discussion\***: Strategies and novel technologies for elemental speciation in soil solution rhizosphere\* (*under supervision of the chair*)

**13.00-13.30 Conclusions**

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**lunch and departure**

Each speaker will give a 40 min lecture + 5 min discussion. Program could be subject to changes.

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## PhD Winter School

### *Rhizosphere at work: soil-plant-microbes interactions, from plant nutrition to soil remediation*

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## Location

Summer School will be held at the Catholic University of Piacenza

For the web site: <http://www.unicatt.it>.

## How to reach University of Piacenza

### by CAR

- Motorway A1 (Milano-Bologna): Exit "Piacenza Sud".
- Motorway A21 (Torino-Brescia): Exit "Piacenza Sud".

Follow for Piacenza centre. Turn left at round-about, after the overpass go straight ahead for 500 meters, the University is on the right.

### by TRAIN

For train visit <http://www.ferroviedellostato.it/>. The railway station Piacenza (Piazza Marconi), which is an important railway hub for the entire northern Italy, is reachable by train railway lines:

- Milan - Bologna
- Turin - Piacenza

### by BUS from the railstation (Piazza Marconi)

- Bus n.2 direction "S.Lazzaro Università", with stop in via E. Parmense
- Bus n. 3 or 7 direction "Capitolo", with stop in via E. Parmense

### by AIRPLANE

- from Milan: Airports "Linate" or "Malpensa" ([www.sea-aeroportoimilano.it](http://www.sea-aeroportoimilano.it))
- from Bergamo: Airport "Orio al Serio" ([www.sacbo.it](http://www.sacbo.it)) At the terminals are available shuttle bus connecting the airport to the train station in Milan.
- from Parma: Airport "Giuseppe Verdi" ([www.aeroportoiparma.it](http://www.aeroportoiparma.it))
- from Bologna: Airport "Guglielmo Marconi" ([www.bologna-airport.it](http://www.bologna-airport.it))
- from Brescia: Airport "Gabriele D'Annunzio" in Montichiari ([www.aeroportobrescia.it](http://www.aeroportobrescia.it))
- from Verona: Airport "Valerio Catullo" in Villafranca ([www.aeroportoverona.it](http://www.aeroportoverona.it))

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## **Registration Fee**

Number of School participants is limited to 30 PhD students/post docs.

School fee: **60 Euro**, which cover the lunch costs from 18 February to 20 February.

PhD students are requested to send a document attesting their status (mail [gian.beone@unicatt.it](mailto:gian.beone@unicatt.it); fax 0523-599217)

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## **Accommodation**

For the accommodation during the school, the participants must provide their own for the reservation of the rooms.

You can book the Gasparini Residence with the special rate of **40 Euro** per night in BB (<http://educatt.unicatt.it/educatt-residenza-gasparini-il-collegio> +39 0523-621111).

An alternative close to the University is the hotel City ([www.hotelcitypc.it](http://www.hotelcitypc.it); +39 0523-579752; during the reservation specify that you are going to the University to have a special deal)

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## Registration procedure

Registration deadline: **15 December 2013.**

For registration please, follow this three-steps procedure:

1) payment of **60 Euro**, by bank transfer, to:

**Account holder:** Società Italiana di Chimica Agraria

**Account number:** 1000/12263

**Bank:** Banca Prossima, via Manzoni ang. Via Verdi, 20121 Milano

**IBAN:** IT64 V 03359 01600100000012263

All banking costs must be paid by the participant.

The name and address of the participant as well as the details of the payment should be clearly indicated when completing the bank transfer.

2) **send a scanned copy** of your payment (JPG or PDF format), by e-mail at [gian.beone@unicatt.it](mailto:gian.beone@unicatt.it)

3) **send your registration form** to [gian.beone@unicatt.it](mailto:gian.beone@unicatt.it)

**Once you have completed this three-steps procedure, we will confirm your registration by e-mail.**

## Poster presentation

You are welcome to prepare a poster (max size: 80 x 100 cm) of your current work, in which case we kindly request you to submit an abstract before **15 December 2013**. Four abstract selected by the Organizing Committee will be presented by their applicants (10 min presentation + 2 min of discussion). Applicants will be informed about the selection one week before the starting of the school.

Abstract format: abstract should not exceed 250 words, (courier 12 pt) and all the authors names and affiliations should be indicated. Abstract should be sent as word file to [roberto.terzano@uniba.it](mailto:roberto.terzano@uniba.it).

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## **General information**

### *Contacts*

For any questions or doubts regarding School organization, please contact organizers at

[gian.beone@unicatt.it](mailto:gian.beone@unicatt.it)

[roberto.terzano@uniba.it](mailto:roberto.terzano@uniba.it)

[nicola.tomasi@uniud.it](mailto:nicola.tomasi@uniud.it)

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## **Registration form**

Please complete the form and send it to [gian.beone@unicatt.it](mailto:gian.beone@unicatt.it)

<b>First name</b>	
<b>Family name</b>	
<b>e-mail address</b>	
<b>Name of your current Research Institute</b>	
<b>Address of your current Research Institute</b>	
<b>If PhD student, please specify name of your tutor</b>	
<b>Did you send scanned copy of your bank payment to ?</b>	
<b>Do you intend to present a poster? Y/N</b>	

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**Organizing committee:**

Tanja Mimmo - UniBZ  
Gian Maria Beone - UniPC  
Luciano Cavani - UniBO  
Edoardo Puglisi - UniPC  
Nicola Tomasi - UniUD  
Roberto Terzano - UniBA  
Marco Trevisan - UniPC  
Stefano Cesco - UniBZ  
Claudio Ciavatta - UniBO

**Speakers:**

Tanja Mimmo - UniBZ  
Nicola Tomasi - UniUD  
Gianpiero Vigani - UniMI  
Luciano Cavani - UniBO  
Anita Zamboni - UniVR  
Stefania Astolfi - UniVT  
Daniele Del Buono - UniPG  
Markus Puschenreiter - UniBoku (A)  
Ilenia Cattani - UniPC  
Maria Chiara Fontanella - UniPC  
Youri Pii - UniBZ  
Davide Bulgarelli - UniDundee (UK)  
Eduardo Puglisi - UniPC  
Roberto Terzano - UniBA  
Giancarlo Renella - UniFI

**Chairman and organizer of the Team  
work and discussion:**

Edoardo Puglisi UniPC  
Matteo Spagnuolo UniBA  
Vito Armando Laudicina UniPA  
Gian Maria Beone UniPC

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