

# 18th International Symposium on Iron Nutrition and Interaction in Plants

May, 30th – June 3rd

*Information brochure*





## SCHEDULE ISINIP 2016

<i>Monday, 30th May</i>	
16:00	Registration open
17:00	Opening Ceremony Prof. José María Sanz Rector of the UAM Mr. Ignacio Horche CEO BIOBAB R&D SL and chairman of the AEN/CTN 142 "Fertilizers, soil conditioners and substrates" Prof. Juan José Lucena Chairman of the 2016 ISINIP, Dept. of Agricultural Chemistry and Food Sciences. UAM
17:15	<b>I-PL: Ricardo Amils</b> Professor of Microbiology. Dept. of Molecular Biology. UAM Importance of the iron geomicrobiology in the mobilization of a critical element for life
18:00	<b>I-PL: Nicolaus von Wirén</b> Head of Research Group on Molecular Plant Nutrition. IPK Recent developments in Plant Iron Research
19:00	Welcome reception (19:00)

<i>Tuesday, 31st May</i>	
<b>9:00-9:30</b> Poster mounting and registration	
Session 1: Iron chemistry and dynamics in soil Chairperson: <b>Dr. Walter Schenkeveld</b> . University of Vienna	
9:30-10:10	<b>PL: Stephan M. Kraemer</b> , Walter Schenkeveld The Geochemistry of Strategy II Plant Iron Uptake
10:10-10:40	<b>KN: José Torrent</b> Soil minerals in iron nutrition: a short guide to friends and foes
10:40-10:55	O1: Walter D.C. Schenkeveld and Stephan M. Kraemer Synergistic effects between root exudates in Fe acquisition from soil
10:55-11:10	O2: Felipe Yunta and Juan J. Lucena Physic-chemical soil characterization must be done as preliminary step to predict the behavior of iron fertilizers
11:10-11:30	Coffee break
Session 2: Agronomic practices to correct Fe deficiency: fertilizer development Chairperson: <b>Dr. Álvarez Fernández</b> . EEAD-CSIC	
11:30-12:00	<b>KN: Adamo Domenico Rombolà</b> Strategies for iron deficiency prevention in sustainable orchards and vineyards
12:00-12:30	<b>KN: Sandra López-Rayó</b> Trends in Fe fertilization: from synthetic to natural compounds
12:30-12:45	O1: Adam Nawrocki, Magdalena Chojnacka-Jankowiak FeHBED - From medical to agronomic application
12:45-13:00	O2: Marcel H.J. Bugter, Arjen M. Reichwein, Levi M. Bin, Daniel Sanjosé Miquel Testing the promising, 100% ortho-ortho, FeHBED for soil application
13:00-13:15	O3: Clara Martín-Fernández and Juan J. Lucena Activation of the soybean root reductase activity and uptake as a function of the variety, chelate culture and Fe starvation
13:15-13:30	O4: Motofumi Suzuki, Kosuke Namba Novel synthetic analogs of mugineic acid family phytosiderophores are effective iron-fertilizers in calcareous soils
13:30-15:00	Lunch (Steering Committee meeting) Poster session. Authors of sessions 1 to 4 should be present

<b>Tuesday, 31st May (Cont.)</b>	
Session 3: Agronomic practices to correct Fe deficiency: genetic approaches Chairperson: <b>Silvia Cianzio</b> . Iowa State University	
15:00-15:30	<b>KN: Michelle A. Graham</b> Using Genomics to Characterize Soybean's Iron Deficiency Response
15:30-15:45	O1: Tomoko Nozoye, Takeshi Senoura, Suyoen Kim, Yuske Kakei, Michiko Takahashi, Motoyasu Otani, Hiromi Nakanishi, Naoko K. Nishizawa Overexpression of barley nicotianamine synthase 1 (hvnas1) confer tolerance to Fe deficiency on calcareous soil in soybean and sweet potato
15:45-16:00	O2: Emre Aksoy, İlknur Tindas, Sevgi Caliskan Soybean: A new frontier in understanding the iron deficiency tolerance mechanisms in plants
16:00-16:20	Coffee break
Session 4 Fe acquisition, transport and distribution in plants Chairperson: <b>Naoko Nishizawa</b> . The University of Tokyo	
16:20-16:50	<b>KN: Ferenc Fodor</b> Fe pools in roots: mechanism of iron acquisition from different sources
16:50-17:05	O1: Brigitta Müller, Hông-Điệp Phạm, Kálmán Szenthe, Éva Hamar, Krisztina Kovács, Éva Sárvári, Ferenc Fodor, Ádám Solti Mechanism and regulation of chloroplast iron uptake
17:05-17:20	O2: Tadakatsu Yoneyama and Tomoko Ariga Chemical forms of cadmium, zinc, and iron in the phloem saps from rice ( <i>Oryza sativa</i> L.) and castor bean ( <i>Ricinus communis</i> L.)
17:20-17:35	O3: Huei-Hsuan Tsai, Jorge Rodríguez-Celma and Wolfgang Schmidt The dioxygenase S5'H1 is a critical component of the Arabidopsis iron acquisition system
17:35-17:50	O4: Adrián Luis-Villarroya, Yolanda Gogorcena, Javier Abadía, Anunciación Abadía, Ana Álvarez-Fernández ccRoot secretion and accumulation of catechol coumarins in iron deficient Prunus rootstocks

<b>Wednesday, 1st June</b>	
Session 4: Fe acquisition, transport and distribution in plants (Cont.) Chairperson: <b>Ferenc Fodor</b> Eötvös Loránd University	
9:00- 9:40	<b>PL: Petra Bauer</b> Multiple layers: Regulation of iron deficiency responses
9:40- 9:55	O5: Jesse T. Beasley, Julien P. Bonneau, Yuan Li, Alexander A. T. Johnson Discovery and Characterisation of Nicotianamine Aminotransferase and Deoxymugineic Acid Synthase Genes Essential to Strategy II Fe Uptake in Bread Wheat
9:55-10:10	O6: Takeshi Senoura, Tomoko Nozoye, Hiromi Nakanishi, and Naoko K. Nishizawa Efflux or uptake transporters involved in iron transport and distribution in rice plants
10:10-10:25	O7: Carlos Lucena, Rafael Porras, Francisco J. Romera, Esteban Alcántara, María J. García, Rafael Pérez-Vicente Ethylene and phloem signals are implicated in the regulation of responses to Fe and P deficiencies in roots of strategy I plants
10:25-10:55	Coffee break
11:00-19:00	Field Trip (Finca "el Socorro") Cultural Visit to Alcalá de Henares



<b>Thursday, 2nd June</b>	
Session 5: Iron and plant metabolism Chairperson: Tadakatsu Yoneyama. University of Tokyo	
9:00-9:30	<b>KN:</b> Astrid Agorio, Jérôme Giraudat, Michele Bianchi, Françoise Lelièvre, Eiri Heyno, Sébastien Thomine, Sylvain Merlot Mutations in <i>Pleckstrin Homology domain protein 1 (AtPH1)</i> rescue <i>nramp3nramp4</i> phenotypes by altering the subcellular localization of AtNRAMP1
9:30-10:00	<b>KN: Gianpiero Vigani</b> Multifaceted role of Fe deficiency-induced metabolic changes in plants
10:00-10:15	O1: Irene Murgia, Dario Di Silvestre, Silvia Donnini, Anna Maria Agresta, Pierluigi Mauri, Florian Bittner, Gianpiero Vigani Cucumis sativus plants response to iron deficiency involves a wide alteration of molybdenum homeostasis
10:15-10:30	O2: Motofumi Suzuki, Tomoko Nozoye, Seiji Nagasaka Hiromi Nakanishi, Naoko K. Nishizawa, Satoshi Mori Detection of endogenous 2'-deoxymugineic acid in olive plant indicates biosynthesis of phytosiderophore in non-graminaceous plants
10:30-10:45	O3: Kyoko Higuchi, Tomomi Ogawa, Chiyo Kawamura, Rei Obata, Tomoe Fujisaku, Akihiro Saito The regulatory mechanism of iron and metabolic adaptation in leaves of iron-deficiency tolerant cultivars of barley
10:45-11:00	O4: Laura Ceballos-Laita, Daisuke Takahashi, Matsuo Uemura, Anunciación Abadía, Javier Abadía, Ana Flor López-Millán Effects of Fe and Mn deficiencies in the protein profiles of tomato ( <i>Solanum Lycopersicum</i> ) xylem sap
11:00-11:30	Coffee break
Session 6: Molecular regulation of Fe homeostasis Chairperson: Petra Bauer. Heinrich Heine University	
11:30-12:10	<b>PL: Hong-Qing Ling</b> , Chun I. Chen, Hui I. Wu, Yue Zhang, Ning Wang, Yan Cui. Regulation Network of Iron Uptake and Homeostasis in Strategy I Plants
12:10-12:25	O1: Isabel C. Vélez-Bermúdez, Wen-Dar Lin and Wolfgang Schmidt Orchestration of transcriptional and translational control of cellular iron homeostasis
12:25-12:40	O2: Hans-Jörg Mai and Petra Bauer Transcriptomic analyses reveal novel FIT targets, temporally FIT-dependent genes and functionally distinct robustly iron deficiency-induced regulons
12:40-12:55	O3: Jorge Rodriguez-Celma, James Connorton and Janneke Balk Characterization of two root specific BRUTUS/HRZ homologs found uniquely in dicotyledoneous plants
12:55-13:10	O4: Song Tan, Fang Liu, Xiao-Xi Pan, Yue-Peng Zang, Fei Jin, Wei-Xi Zu, Xiao-Ting Qi, Wei Xiao, Li-Ping Yin CSN6, a subunit of the COP9 signalosome, is involved in early response to iron deficiency in <i>Oryza sativa</i>
13:10-14:40	Lunch Poster session. Authors of sessions 5 to 8 should be present

<b>Thursday, 2nd June (Cont.)</b>	
Session 6: Molecular regulation of Fe homeostasis (Cont.) Chairperson: Irene Murgia. University of Milan	
14:40-15:10	<b>KN:</b> Minh Hoang, Loren Castaings, Sandrine Chay, Carine Alcon, Stéphane Mari, <b>Catherine Curie</b> Identification of key players of Fe speciation and transport machineries and regulation of Mn uptake by endocytosis
15:10-15:25	O5: Girish Mokkalapati, Louis Grillet and Wolfgang Schmidt IRON MAN, a conserved novel family of peptides involved in iron homeostasis of plants
15:25-15:40	O6: Wei Qiu, Jing Dai, Nanqi Wang and Yuanmei Zuo A citrate transporter AhFRDL1 is involved in iron translocation and Al-tolerance in peanut
15:40-16:10	Coffee break ( )
16:10-16:25	O7: Takanori Kobayashi, Reiko Nakanishi Itai, Takeshi Senoura, Takaya Oikawa, Yasuhiro Ishimaru, Minoru Ueda, Hiromi Nakanishi, and Naoko K. Nishizawa HRZ ubiquitin ligases and jasmonate signaling regulate iron deficiency responses in rice roots
16:25-16:40	O8: Nicolas Tissot, Jossia Boucherez, Amel Maghiaoui A, Romain Marcelin, Frédéric Gaymard, Jean-François Briat, Christian Dubos Identification and characterization of an integrator of the plant responses to iron availability
20:00	Symposium Dinner Poster Awards

<b>Friday, 3rd June</b>	
Session 7: Iron interaction with microorganism and environment Chairperson: Manuel González-Guerrero. UPM	
9:00-9.30	<b>KN:</b> Aude Aznar, Nicolas W.G. Chen, Sebastien Thomine, <b>Alia Dellagi</b> Iron : At the crossroads of plant immunity and nutrition
9:30-9:45	O1: Alexandra Lešková, Ricardo F.H. Giehl, Anja Hartmann, Agáta Fargašová, and Nicolaus von Wirén Dissecting the interference of heavy metals with iron deficiency responses in <i>Arabidopsis thaliana</i>
9:45-10:00	O2: Teresa Fresno, Jesús M. Peñalosa, Jakob Santner, Markus Puschenreiter, Thomas Prohaska and Eduardo Moreno-Jiménez. Arsenic immobilization on root surface of <i>lupinus albus l.</i> as a consequence of iron plaque formation under aerobic conditions
10:15-10:30	O3: Anja Raschke, Mario Lange, Emad Albarouki, Holger B. Deising Iron as a determinant of virulence and resistance in the <i>Colletotrichum graminicola</i> – maize interaction)
10:30-10:45	O4: Manuel Tejada-Jiménez, Rosario Castro-Rodríguez, Igor Kryvoruchko, M. Mercedes Lucas, Michael Udvardi, Juan Imperial, Manuel González-Guerrero MtNRAMP1 is responsible for iron uptake by rhizobia infected cells in <i>Medicago truncatula</i> nodules.
10:45-11:15	Coffee break

**Friday, 3rd June**

Session 8: Iron fortification of crops for a better human nutrition  
Chairperson: Janneke Balk. University of East Anglia and John Innes Centre

11:15-11:45	<b>KN: Narayanan Narayanan</b> , Getu Beyene, Raj Deepika Chauhan, Eliana Gaitán-Solis, Dimuth Siritunga Michael A. Grusak, Nigel Taylor and Paul Anderson Biofortification of Cassava Storage Roots to Achieve Nutritionally Significant Levels of Iron and Zinc
11:45-12:00	O1: S. Bahar Aciksoz, Atilla Yazici and Ismail Cakmak Role of different nitrogen fertilizer forms on shoot and grain concentrations of iron
12:00-12:15	O2: James Connorton, Cristobal Uauy, Janneke Balk Characterising vacuolar iron transporters as targets for mineral biofortification in wheat grain
12:15-12:30	O3: Hiroshi Masuda, May Sann Aung, Takanori Kobayashi, Hiromi Nakanishi, Naoko K. Nishizawa Producing high iron rice with important rice varieties
12:30-12:45	O4: Laura T. Moreno-Moyano, Julien Bonneau, Joseph Tohme, Alexander A.T Johnson Agro-morphological and nutritional characterization of iron and zinc biofortified backcross rice
12:45	<b>Concluding Remarks: Wolfgang Schmidt. Academia Sinica</b> <b>CLOSING</b>
13:15	<b>Lunch</b>
13:15	<b>Poster dismounting</b>







## Post Symposium Publication

Springer S+B Media B.V and the Organizing committee of the 18<sup>th</sup> ISINIP have agreed to accept to edit a special issue entitled *Iron nutrition in plants* for the **Journal Plant and Soil (PLSO)**. Juan J. Lucena, Ana Álvarez, Ana López-Millán and Lourdes Hernández-Apaolaza will act as Guest editors.

The scientific contents consist of an edited and refereed collection of papers, for which the authors of the communications presented to the 18<sup>th</sup> ISINIP are invited to submit by the Guest Editors. The choice of referees, the referee process and final selection of papers are the responsibility of the PLSO Managing Editor appointed by the Editor in Chief.

The deadline to present the papers is **30 August 2016**

The special issue has a size of approximately 25 papers, to a maximum page count of 350 printed pages (including references, figures and tables).

Authors should follow the correct procedure for the submission of the manuscripts intended for publication in the special issue. It is crucial that this procedure is followed by each corresponding author, otherwise the papers will not be recognized as being part of the special issue and will be published as regular papers. The procedure for submission of the special issue via Editorial Manager, the online submission and review system for PLSO is as follows:

- a. Authors submit their paper through the following website <http://plso.edmgr.com/>
- b. During the online submission procedure, when asked to 'Select an Article Type', authors must choose '**S68 – ISINIP2016**' from the dropdown

It is important that the authors follow instructions carefully, as given in the "Instructions for Authors" details online:

<http://www.springer.com/life+sciences/plant+sciences/journal/11104> and in the front of every issue of the journal. Please note that colour figures will be reproduced in black and white in the print copy and in colour online. Figures may be reproduced in colour in the print copy at the expense of the Authors.

There are no financial obligations, no page charge and no honorarium.

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### Field Trip (Finca “el Socorro”) and Cultural Visit to Alcalá de Henares (Wednesday, 1<sup>st</sup> June):

- 11:00 Departure from Cantoblanco Campus (see Map for buses location)
- 12:00 Arrival and visit to Finca “El Socorro”. CTTV Finca el Socorro is an experimental station managed by the IMIDRA (Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario) where vineyard culture is investigated and knowledge transmitted to the growers.
- 13:00. Regional wine and olive oil tasting and field lunch with paella
- 14:00. Departure from El Socorro
- 14:45 Arrival to Alcalá de Henares and guided tour around Old town Alcalá de Henares and Cervantes’ House
- 18:00. Departure to Madrid city Center and Cantoblanco Campus

### Symposium Dinner in Hotel NH Eurobuilding (Thursday, 2<sup>nd</sup> May)

- Start at 20:00 h and finish at 23:00 h
- Address: Padre Damián street, 23 ,28036 Madrid)
- How to arrive: From Chamartin station you may take Metro Line 10 direct to Cuzco station and walk five minutes to the hotel. From Atocha station, you may take a train to Nuevos Ministerios station where you will transfer to Metro Line 10. Disembark at the Cuzco station and walk five minutes to the hotel.
- Hotel location Map



### **TRANSPORT TO CANTOBLANCO CAMPUS (UAM)**

By **BUS** (with stop inside the campus):

- Line 714: Plaza Castilla - Cantoblanco - Comillas

[http://www.crtm.es/tu-transporte-publico/autobuses-interurbanos/lineas/8\\_714.aspx](http://www.crtm.es/tu-transporte-publico/autobuses-interurbanos/lineas/8_714.aspx)

- Line 827: Alcobendas - Cantoblanco
- Line 827A: San Sebastián de los Reyes - Alcobendas - Cantoblanco
- Line 828: Campo de las Naciones – Airport – Cantoblanco

<http://www.empresamontes.es/index.php/es/lineas-paradas>

By **TRAIN (Cercanías Renfe)**

- Line C-4a Parla-Atocha-San Sebastián de los Reyes
- Line C-4b Parla-Atocha-Colmenar Viejo

<http://www.renfe.com/EN/viajeros/cercanias/madrid/index.html>

**CONFERENCE SESSIONS** in SALON DE ACTOS Faculty of Psychology, main hall.

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## Post-Symposium scientific publications

