

XVI International Plant Nutrition Colloquium:
Plant Nutrition for Sustainable Development and Global Health
August 26th – 30th, Sacramento, California
Program of Events

August 26th

3:00 pm - 7:00 pm Registration, East Lobby (Ballroom Level), Sacramento Convention Center
5:00 pm - 7:00 pm Opening Reception, Sheraton Grand Hotel Ballroom. Sponsored by
Department of Plant Sciences, University of California – Davis

August 27th, Sacramento Convention Center

General Session (Room 307-308)

7:00 am - 7:00 pm Registration
8:30 am - 9:00 am Welcome and Opening
9:00 am - 9:50 am New Phytologist Lecture: “Plant nutrition for a healthy planet,”
Dr. Michael Grusak USDA-ARS Children's Nutrition Research Center, USA
9:50 am - 10:20 am Coffee Break (East Lobby)

General Session(Room 307-308)

10:20 am - 11:05 am Physiologia Plantarum Lecture: “Mechanisms of iron homeostasis in
plants and their regulations”
*Dr. Jean-Francois Briat, CNRS-INRA Montpellier, France (1425/[PDF](#)
[Download](#))*
11:05 am - 11:50 am “Maximizing (productivity and efficiency) in contemporary agriculture”
Dr. Paul Fixen, International Plant Nutrition Institute (1291/[PDF](#))

Lunch

11:50 am - 1:20 pm Lunch (Room 306 & 315), Poster Sessions A, B and Exhibit Viewing (East
Lobby, Rooms 309-312, 317-319)

Thematic Sessions (occurring concurrently)

1:20 pm - 6:00 pm Session A: Nutrient acquisition, homeostasis and source-sink relations
(Room 307-308) (See session details below)
1:20 pm - 6:00 pm Session B: Nutrient management for optimal productivity and
sustainability (Room 313-314) (See session details below)

Poster Viewing Session

6:00 pm - 8:00 pm Poster Viewing for Sessions A, B, C and D (East Lobby, Rooms 309-312,
317-319); Hosted Happy Hour

August 28th, Sacramento Convention Center

General Session (Room 307-308)

- 8:30 am - 9:15 am "Plant Responses to Rising Carbon Dioxide and Nitrogen Relations"
Dr. Arnold Bloom, University of California, Davis, USA (1445/[PDF Download](#))
- 9:15 am - 10:00 am "Rethinking the principles and practices of nutrient monitoring and field testing in horticulture"
Dr. Patrick Brown, University of California, Davis, USA (1442/[PDF Download](#))
- 10:00 am - 10:45 am "Metabolic consequences of environmental stress combinations for plant growth and nutritional qualities"
Dr. Vladimir Shulaev, Virginia Bioinformatics Institute, USA
- 10:45 am - 11:15 am Coffee Break (East Lobby)

Thematic Sessions (occurring concurrently)

- 11:15 am - 12:45 pm Session C: Functions, interactions and diagnosis of plant nutrient status (Room 307-308) (See session details below)
- 11:15 am - 12:45 pm Session D: Impact of environmental stresses on plant nutrition (Room 313-314) (See session details below)

Lunch

- 12:45 pm - 2:05 pm Lunch (Room 306 & 315), Poster Session C, D and Exhibit Viewing (East Lobby, Rooms 309-312, 317-319)

Thematic Sessions (occurring concurrently)

- 2:05 pm - 5:00 pm Session C: Functions, interactions and diagnosis of plant nutrient status (Room 307-308) (See session details below)
- 2:05 pm - 5:00 pm Session D: Impact of environmental stresses on plant nutrition (Room 313-314) (See session details below)

Banquet (California Railroad Museum)

- 6:00 pm - 6:30 pm Transport to California Railroad Museum
- 6:00 pm – 7:00 pm Museum Tours and Cocktail hour at California Railroad Museum
- 7:00 pm - 11:00 pm Banquet celebrating the contributions of Emanuel Epstein to the field of plant nutrition. Presented by Dr. Bill Rains, University of California at Davis, and Dr. Ross Welch, USDA/ARS Holley Center for Agriculture and Health, Cornell University

August 29th, Sacramento Convention Center

General Session (Room 307-308)

- 8:00 am - 8:45 am Annals of Botany Lecture: "Nitrogen nutrition of a woody plant and its root associates: a post-genomic perspective"
Dr. Michel Chalot, INRA Nancy, France (1454/[PDF Download](#))
- 8:45 am - 9:30 am "A systems approach to optimizing plant nutrition for human health"
Dr. Ross Welch, USDA-ARS and Cornell University, Ithaca, USA (1438/[PDF Download](#))
- 9:30 am - 10:15 am *Plant and Soil Plenary: Rhizosphere processes: The roots of ecological intensification of ecosystems*
Dr. Philippe Hinsinger, INRA-Montpellier, France (1439/[PDF Download](#))
- 10:15 am - 10:45 am *Coffee Break (East Lobby)*

Thematic Sessions (occurring concurrently)

- 10:45 am - 12:35 pm Session E: Plant nutrition for human health (Room 307-308) (See session details below)
- 10:45 am - 12:35 pm Session F: Environmental plant nutrition – Trees, roots and climate (Room 313-314) (See session details below)

Lunch

- 12:35 pm - 2:00 pm Lunch (Room 306 & 315), Poster Session E, F and Exhibit Viewing (East Lobby, Rooms 309-312, 317-319)
IPNC Council Meeting (Council Members Only) (Room 304-305)

Thematic Sessions (occurring concurrently)

- 2:00 pm – 6:00 pm Session E: Plant nutrition for human health (Room 307-308) (See session details below)
- 2:00 pm – 6:00 pm Session F: Environmental plant nutrition – Trees, roots and climate (Room 313-314) (See session details below)

Poster Viewing Session

- 6:00 pm - 8:00 pm Poster Viewing for Sessions E, F, G and H (East Lobby, Rooms 309-312, 317-319); Hosted Happy Hour
- 7:30 pm - 11:00 pm IPNI and IPNC Dinner (by invitation only)

August 30th, Sacramento Convention Center

General Sessions (Room 307-308)

- 8:30 am - 9:15 am "Adaptive strategies for plant response to toxic metals in the soil"
Dr. Leon Kochian, USDA-ARS and Cornell University, USA (1436/[PDF Download](#))
- 9:15 am - 10:00 am "Integrated soil fertility management in sub-Saharan Africa: principles and practice"
Dr. Bernard Vanlauwe, Senior Scientist, TSBF-CIAT, Kenya (1437/[PDF Download](#))
- 10:15 am - 10:45 am *Coffee Break (East Lobby)*

Thematic Sessions (occurring concurrently)

- 10:45 am - 12:45 pm Session G: Element toxicity and remediation (Room 307-308) (See session details below)
- 10:45 am - 12:45 pm Session H: Nutrient management and the sustainability of agriculture in the developing world (Sponsored by the Journal of Plant Nutrition and Soil Science) (Room 313-314) (See session details below)

Lunch

- 12:45 pm - 2:10 pm Lunch (Room 306 & 315) and Poster Session G, H, and Exhibit Viewing (East Lobby, Rooms 309-312, 317-319)

Thematic Sessions (occurring concurrently)

- 2:10 pm - 4:50 pm Session G: Element toxicity and remediation (Room 307-308) (See session details below)
- 2:10 pm - 4:50 pm Session H: Nutrient management and the sustainability of agriculture in the developing world (Sponsored by the Journal of Plant Nutrition and Soil Science) (Room 313-314) (See session details below)
- 4:50 pm - 5:10 pm *Coffee Break (East Lobby)*

Closing Session (Room 307-308)

- 5:10 pm - 5:30 pm Awards for Best Papers, Student Presentations and Posters
- 5:30 pm - 5:40 pm Introduction of site for IPNC XVII, Ismail Cakmak, Sabanci University
- 5:40 pm - 6:10 pm Closing Thoughts: Arnold Bloom, University of California, Davis
- 6:10 pm - 6:45 pm Closing and Thanks: Patrick Brown

August 27th, Detailed Program Session A: Nutrient Acquisition, Homeostasis and Source-Sink Relations

Chairs: Nico von Wirén and Stefan Abel (Room 307-308)

[Session A Poster PDFs >>](#)

- 1:20 pm - 1:50 pm Keynote: “Silicon uptake and translocation in plants”
Dr. Jian-Feng Ma, Okayama University, Japan. (1139/[PDF Download](#))
- 1:50 pm - 2:10 pm “Calcium compartmentation in Arabidopsis mesophyll cells, A mechanism to regulate apoplastic calcium, photosynthetic rates and growth, involves low-affinity, high-capacity Ca²⁺/H⁺ antiporters.” *Simon J. Conn (University of Adelaide, Australia), Matthew Gilliam, Stephen Tyerman, Brent Kaiser, Roger Leigh (1275/[PDF Download](#))*
- 2:10 pm - 2:30 pm “Transcriptome profiling identifies a common regulatory module for co-regulation of carbon and nitrogen assimilation in Arabidopsis.”
Papapit Ingkasuwan (RIKEN Plant Science Center, Japan; King Mongkut’s University of Technology Thonburi, Thailand), Supapon Cheevadhanarak (King Mongkut’s University of Technology Thonburi, Thailand), Supatcharee Netraphan (National Center for Genetic Engineering and Biotechnology, Thailand), Hideki Takahashi (RIKEN Plant Science Center, Japan; Yokohama City University, Japan) (1173/[PDF Download](#))
- 2:30 pm - 2:50 pm “Development of a highly sensitive, quick, and easy LC-ESI-TOF-MS method to quantify nicotianamine and 2'-deoxymugineic acid in plants.”
Yusuke Kakei (University of Tokyo, Japan), Isomaro Yamaguchi (Maebashi Institute of Technology, Japan), Michiko Takahashi (University of Tokyo), Hiromi Nakanishi (University of Tokyo), Satoshi Mori (University of Tokyo), Naoko K. Nishizawa (University of Tokyo) (1224/[PDF Download](#))
- 2:50 pm - 3:10 pm “Cytokinin-dependent photorespiration and the protection of photosynthesis during water deficit,”
Eduardo Blumwald, University of California, Davis, USA
- 3:10 pm - 3:30 pm “Physiological functions of the urea transporter AtDUR3 in Arabidopsis thaliana”
Anne Bohner (University of Hohenheim, Germany), Nicolaus von Wirén (Leibniz-Institute for Plant Genetics and Crop Plant Research, Germany) (1239/[PDF Download](#))
- 3:30 pm - 4:00 pm *Coffee Break (East Lobby)*

- 4:00 pm - 4:30 pm Annals of Botany Lecture: “Nitrogen retranslocation during senescence in plants”
Dr. Celine Masclaux-Daubresses, CNRS-INRA Versailles, France (1455/[PDF Download](#))
- 4:30 pm - 4:50 pm “The novel transcription factor IDEF1 regulates iron-deficiency response and tolerance”
Takanori Kobayashi (University of Tokyo, Japan), Yuko Ogo, Reiko Nakanishi Itai, Hiromi Nakanishi, Michiko Takahashi, Satoshi Mori, Naoko K. Nishizawa (1192/[PDF Download](#))
- 4:50 pm - 5:10 pm “Quantitative trait loci for seed mineral concentrations and root morphology responding to low phosphorus stress in Brassica napus”
Fangsen Xu, Mei Yang, Guangda Ding, and Lei Shi (Huazhong Agricultural University, China) (1026/[PDF Download](#))
- 5:10 pm - 5:30 pm “Autophagy Sustains the Arabidopsis Root Meristem during Phosphate Starvation”
Siriwat Sakhonwasee , Steffen Abel (Department of Plant Sciences, University of California, Davis, USA) (1426/[PDF Download](#))
- 5:30 pm - 6:00 pm Chair led discussion and introduction to poster session C and D

August 27th, Detailed Program Session B: Nutrient Management for Optimal Productivity and Sustainability

Chairs: Sylvie Brouder, Tim Hartz, Ciro Rosolem (Room 313-314)

[Session B Poster PDFs >>](#)

- 1:20 pm - 1:50 pm Keynote: Do long-term experiments provide the key to sustainable soil productivity?
Bert Janssen, Wageningen University, The Netherlands (1447/[PDF Download](#))
- 1:50 pm - 2:10 pm “Role of soil fungi in nitrogen cycling”
Franciska T. de Vries (Wageningen University, The Netherlands), Jaap Bloem (Wageningen University), Ellis Hoffland (Wageningen University) (1265/[PDF Download](#))
- 2:10 pm - 2:30 pm “Considerations for globally distributed plant nutrition experiments”
T.Scott Murrell (International Plant Nutrition Institute), Harold F. Reetz, Jr. (International Plant Nutrition Institute) (1433/[PDF Download](#))
- 2:30 pm - 2:50 pm “More hidden hunger: Special nutrient needs of plants based on their structure and function.”
Dale Blevins, University of Missouri, USA (1093/[PDF Download](#))
- 2:50 pm - 3:10 pm “Dissolved organic N as a proxy for mineralization”
Gerard H. Ros (Wageningen University, The Netherlands), Erwin J.M. Temminghoff, Ellis Hoffland (Wageningen University) (1268/[PDF Download](#))
- 3:10 pm - 3:30 pm “Impact of soil tillage on the robustness of the genetic component of variation in phosphorus use efficiency in barley”
Timothy S. George (Scottish Crop Research Institute), Lawrie K. Brown (SCRI), Adrian C. Newton (SCRI), Paul D. Hallett (SCRI), Bill Thomas (SCRI), Philip J. White (SCRI) (1211/[PDF Download](#))
- 3:30 pm - 4:00 pm *Coffee Break (East Lobby)*
- 4:00 pm - 4:30 pm Keynote: “Nutrient use efficiency in bioenergy cropping systems: Critical research questions”
Sylvie M. Brouder (Purdue University), Jeffrey J. Volenec (Purdue University), Ron Turco (Purdue University), Douglas R. Smith (USDA-ARS National Soil Erosion Research Lab), Gebisa Ejeta (Purdue University) (1430/[PDF Download](#))

- 4:30 pm - 4:50 pm “Nitrogen fertilizer management of sugarcane crops for meeting global environmental challenges”
Peter J. Thorburn (Australian Commonwealth Scientific and Research Organization), Tony J. Webster (CSIRO), Jody S. Biggs (CSIRO), Ian M. Biggs (CSIRO) (1182/[PDF Download](#))
- 4:50 pm - 5:10 pm “Nitrogen deficiency-induced leaf senescence in seedlings of tropical maize cultivars as a tool to characterize grain-yielding capacity at low nitrogen supply in the field”
Gunda Schulte auf'm Erley, Walter J. Horst, Leibniz University Hannover, Germany (1084/[PDF Download](#))
- 5:10 pm - 5:30 pm “Potential and limitations of tissue analysis as a BMP in vegetable production”
Tim Hartz, University of California, Davis, USA (1444/[PDF Download](#))
- 5:30pm - 6:00 pm Chair led discussion and introduction to poster sessions C and D

August 28th, Detailed Program Session C: Functions, Interactions and Diagnosis of Plant Nutrient Status

Chairs: Javier Abadia & Jan K. Schjoerring (Room 307-308)

[Session C Poster PDFs >>](#)

- 11:15 pm - 11:45 pm Keynote: "Diagnosing Mn deficiency in barley genotypes differing in Mn efficiency using analysis of fast fluorescence inductions kinetics and state transitions"
Soren Husted, University of Copenhagen, Denmark (1284/[PDF Download](#))
- 11:45 pm - 12:05 pm "Metabolite profiling of rice root exudate under phosphorus deficiency"
Keitaro Tawaraya (Yamagata University, Japan), Akiko Saito (Yamagata University), Ryota Horie (Yamagata University), Takuro Shinano (National Agricultural Research Center for Hokkaido Region, Japan), Tadao Wagatsuma (Yamagata University), Kazuki Saito (RIKEN Plant Science Center), Akira Oikawa (RIKEN Plant Science Center) (1309/[PDF Download](#))
- 12:05 pm - 12:25 pm "A molecular diagnostic for phosphorus deficiency in potatoes"
John P. Hammond (Warwick HRI, UK), Martin R. Broadley (University of Nottingham), Helen C. Bowen (Warwick HRI), Rory Hayden (Warwick HRI), Will P. Spracklen (Warwick HRI), Philip J. White (Scottish Crop Research Institute) (1076/[PDF Download](#))
- 12:25 pm - 12:45 pm "PEP-carboxylase activity supports organic acid metabolism of maize (Zea mays) under salt stress"
Sarah Vanessa Hatzig (Justus Liebig Universitat Giessen), Ashwani Kumar, Anja Neubert, Sven Schubert (1038/[PDF Download](#))
- 12:45 pm - 2:05 pm Lunch (306-315) and Poster Viewing Sessions C, D (East Lobby, Rooms 309-312, 317-319)
- 2:05 pm - 2:35 pm Keynote: "Identification of boron-binding proteins supports a function of boron at the cell membrane"
Monika A. Wimmer (University of Bonn, Germany), Guenter Lochnit (University of Giessen, Germany), Elias Bassil (University of California Davis), Karl H. Muehling (University of Giessen, current: University of Kiel), Patrick H. Brown (University of California Davis), Heiner E. Goldbach (University of Bonn) (1235/[PDF Download](#))
- 2:35 pm - 3:05 pm Keynote, Annals of Botany Lecture: "Boron transport in plants: coordinated regulation of transporters"
Kyoko Miwa, Toru Fujiwara (University of Tokyo, Japan) (1283/[PDF Download](#))

- 3:05 pm - 3:25 pm “Exploring the physiological basis for high reproduction sensitivity to boron deficiency in plants”
Longbin Huang (University of Queensland, St Lucia), Richard William Bell (Murdoch University, Australia), Bernard Dell (Murdoch University)
 (1063/[PDF Download](#))
- 3:25 pm - 3:45 pm “Recent developments in plant tissue analysis”
Kristian H. Laursen (University of Copenhagen, Denmark), Thomas H. Hansen (University of Copenhagen), Daniel P. Persson (University of Copenhagen), Jan K. Schjoerring (University of Copenhagen), Soeren Husted (University of Copenhagen) (1245/[PDF Download](#))
- 3:45 pm - 4:10 pm *Coffee Break (East Lobby)*
- 4:10 pm - 4:40 pm Keynote: “Changes in the proteomic and metabolomic profiles of Beta vulgaris root tips in response to iron deficiency and resupply”
Rubén Rellán-Álvarez (Estacion Experimental de Aula Dei, Consejo Superior de Investigaciones Cientificas, Spain), Sofía Andaluz (EEAD-CSIC, Spain), Ana Flor López-Millán (EEAD-CSIC, Spain), Oliver Fiehn (UC Davis, USA), Ana Álvarez-Fernández (EEAD-CSIC, Spain), Javier Abadia (EEAD-CSIC, Spain) (1321/[PDF Download](#))
- 4:40 pm - 5:00 pm “Influence of N forms on tillering, cytokinin translocation and yield in cereal crop plants”
Bernhard Bauer (University of Hohenheim and Institute for Plant Genetics and Crop Plant Research, Gatersleben, Germany), Fritz Bangerth (University of Hohenheim, Germany), Nicolaus von Wirén (Leibniz-Institute for Plant Genetics and Crop Plant Research, Gatersleben)
 (1289/[PDF Download](#))
- 5:00 pm - 5:30 pm Chair led discussion and summary of poster session

August 28th, Detailed Program Session D: Impact of Environmental Stresses on Plant Nutrition

Chairs: Eduardo Blumwald and Ron Mittler (Room 313-314)

[Session D Poster PDFs >>](#)

- 11:15 am - 11:45 am Keynote: "Genetic dissection of the ionome."
David Salt, Purdue University, USA (1422/[PDF Download](#))
- 11:45 am - 12:05 pm "Phosphate sensing in root development,"
Steffen Abel, University of California, Davis, USA
- 12:05 pm - 12:25 pm "Rapid systemic signaling in response to abiotic stresses in plants,"
Ron Mittler, University of Nevada, Reno, USA
- 12:25 pm - 12:45 pm "Manipulation of proton gradients and their effects in plant nutrition and biomass formation."
Roberto Gaxiola, Arizona State University, USA
- 12:45 pm - 2:05 pm Lunch (306-315) and Poster Viewing Sessions C, D (East Lobby, Rooms 309-312, 317-319)
- 2:05 pm - 2:35 pm Keynote: "Plant nutrition, stress and the forgotten element, silicon,"
Emanuel Epstein, University of California, Davis, USA (1440/[PDF Download](#))
- 2:35 pm - 3:05 pm Keynote: "Proteome analysis and pH sensitive ratio imaging: Tools to explore the decline in leaf growth under salinity"
Karl H. Mühling (University of Kiel, Germany), Britta Pitann (University of Giessen, Germany), Thorsten Kranz (University of Giessen), Christoph M. Geilfus (University of Kiel), Christian Zörb (University of Kiel) (1155/[PDF Download](#))
- 3:05 pm - 3:25 pm "The CVL-CIPK calcium signaling network in plants,"
Sheng Luan, University of California, Berkeley, USA
- 3:25 pm - 3:45 pm "Genomic-physiological dissection of grain protein and mineral nutrient concentrations in wild emmer wheat under contrasting water availabilities"
Zvi Peleg (The Hebrew University of Jerusalem, Israel), Ismail Cakmak (Sabanci University, Turkey), Atilla Mustafa Yazıcı (Sabanci University), tzion Fahima (University of Haifa, Israel), Yehoshua Saranga (The Hebrew University of Jerusalem) (1133/[PDF Download](#))

- 3:45 pm - 4:10 pm *Coffee Break (East Lobby)*
- 4:10 pm - 4:40 pm Keynote: "Metabolite imaging with mass-spectrometry to unravel the surface of plants," *Basil Nikolau, Iowa State University, USA (1448/[PDF Download](#))*
- 4:40 pm - 5:00 pm "Sugar transport and nitrate reductase activity rate in roots affect plant adaptation to cold and warm climate plants,"
Uzi Kafkafi, The Hebrew University of Jerusalem, Israel (1303/[PDF Download](#))
- 5:00 pm - 5:30 pm Chair led discussion and summary of poster session

August 29th, Detailed Program Session E: Plant Nutrition for Human Health
Chairs: Michael Grusak and Jorge Dubcovsky (Room 307-308)

[Session E Poster PDFs >>](#)

- 10:45 am - 11:15 am Keynote: "Improved remobilization of Zn, Fe and N from the straw to the wheat grain."
Jorge Dubcovsky (University of California, Davis, USA), Cristobal Uauy (John Innes Centre, UK), Assaf Distelfeld (University of California, Davis), Juan C. Brevis (University of California, Davis) (1407/[PDF Download](#))
- 11:15 am - 11:35 am "Localization of iron, zinc and protein in seeds of spelt (*Triticum aestivum* ssp. *spelta*) genotypes with low and high protein concentration."
Levent Ozturk, Sabanci University, Turkey (1391/[PDF Download](#))
- 11:35 am - 11:55 am "Zinc and iron speciation in the cereal grain."
Jan K. Schjoerring (University of Copenhagen, Denmark), Daniel P. Persson (University of Copenhagen), Thomas H. Hansen (University of Copenhagen), Kristian H. Laursen (Copenhagen University), Søren Husted (University of Copenhagen) (1319/[PDF Download](#))
- 11:55 am - 12:15 pm "Increasing the supply of sulphur increases the grain zinc concentration in bread and durum wheat."
Glenn K. McDonald (University of Adelaide, Australia), Moshen Mousavvi Nik (University of Birjand, Iran) (1207/[PDF Download](#))
- 12:15 pm - 12:35 pm "Iron, zinc, and manganese distribution in mature soybean seeds."
Cristina Cvitanich (Aarhus University, Denmark), Wojciech J. Przybyłowicz (iThemba LABS, South Africa. On leave from: AGH University of Science and Technology, Poland), Jolanta Mesjasz-Przybyłowicz (iThemba LABS, South Africa), Matthew W. Blair (CIAT - Centro Internacional de Agricultura Tropical, Colombia.), Erik Ø. Jensen (University of Aarhus, Denmark), Jens Stougaard (University of Aarhus, Denmark) (1231/[PDF Download](#))
- 12:35 pm - 2:00 pm Lunch (306-315) and Poster Viewing Sessions E, F (East Lobby, Rooms 309-312, 317-319)
- 2:00 pm - 2:30 pm "Ferric reductase transcription and activity in *Pisum sativum* accessions"
Melinda A. Klein (Baylor College of Medicine, USA), Michael A. Grusak, USDA-ARS Children's Nutrition Research Center, USA (1267/[PDF Download](#))

- 2:30 pm - 2:50 pm “Concentrations of heavy metals in soil and cassava plant on sewage sludge dump.”
Chris Washington Ifeanyi Igbozuruike Mr. (Imo State University, Nigeria), Achilihu Oliver Opara-Nadi Prof (Abia State University Uturu Okigwe Abia State, Nigeria), Ikechukwu Kennedy Okorie DR (Imo state University Owerri Imo State Nigeria) (1322/[PDF Download](#))
- 2:50 pm - 3:10 pm “AtbHLH38 and AtbHLH39 interact with FIT, functioning in control of iron uptake in Arabidopsis,”
Hong-Qing Ling (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences), Huilan Wu (Insitute of Genetics and Developmental Biology, Chinese Academy of Sciences), Juan Du (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences), Ning Wang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences) (1120/[PDF Download](#))
- 3:10 pm - 3:30 pm “Iron fortification in parboiled rice – a rapid and effective tool for delivering Fe nutrition to rice consumers.”
Chanakan Prom-u-thai Dr. (Chiang Mai University, Thailand), Longbin Huang Dr. (The University of Queensland, Australia), Shu Fukai Prof. (The University of Queensland, Australia), Benjavan Rerkasem Prof. (Chiang Mai University, Thailand) (1095/[PDF Download](#))
- 3:30 pm - 4:00 pm *Coffee Break (East Lobby)*
- 4:00 pm - 4:30 pm “Biofortifying Brassica with calcium (Ca) and magnesium (Mg).”
Martin R. Broadley (University of Nottingham, England), John P. Hammond (Warwick HRI, UK), Graham J. King (Rothamsted Research, England), Helen C. Bowen (Warwick HRI), Rory Hayden (Warwick HRI), William P. Spracklen (Warwick HRI), Seosamh Ó Lochlainn (University of Nottingham), Philip J. White (Scottish Crop Research Institute) (1256/[PDF Download](#))
- 4:30 pm - 4:50 pm “Temporal dynamics in wheat grain zinc distribution: Is sink limitation the key?”
Tjeerdjan Stomph (Wageningen University, The Netherlands), Eun-Young Choi (Flinders University, Australia), James Constantine Stangoulis (Flinders University) (1331/[PDF Download](#))
- 4:50 pm - 5:10 pm “Over-expressing a barley ZIP gene doubles grain zinc content in barley (*Hordeum vulgare*).”
Jingwen Tiong (Australian Centre for Plant Functional Genomics, Australia), Yusuf Genc (Molecular Plant Breeding Cooperative Research

Centre, Australia), Glenn K. McDonald (University of Adelaide, Australia), Peter Langridge (Australian Centre for Plant Functional Genomics, Australia), Chun Y. Huang Dr (The University of Adelaide) (1326/[PDF Download](#))

5:10 pm - 5:30 pm “Sorghum germplasm profiling to assist breeding and gene identification for biofortification of grain mineral and protein concentrations.”
Brian M. Waters (University of Nebraska at Lincoln, USA), Jeffrey F. Pedersen (USDA-ARS NPA Grain, Forage & Bioenergy Research) (1228/[PDF Download](#))

5:30 pm - 6:00 pm Chair led discussion and introduction to poster sessions E, G

August 29th, Detailed Program Session F: Environmental Plant Nutrition – Trees, Roots and Climate

Chairs: Tarja Lehto, Arnold Bloom, Heinz Rennenberg, Petra Marschner, Iver Jakobsen (Room 313-314)

[Session F Poster PDFs >>](#)

- 10:45 am - 11:15 am Keynote: "Regulation of nitrogen nutrition at the whole tree level"
Heinz Rennenberg, University of Freiburg, Germany (1452/[PDF Download](#))
- 11:15 am - 11:35 am "Biological Nitrification Inhibition (BNI) Potential in Sorghum"
Subbarao V. Guntur, Hossain AKM Zakir (Bangladesh Agricultural University), Nakahara K (JIRCAS), Ishikawa T (JIRCAS), Yanbuaban M (JIRCAS), Yoshihashi T (JIRCAS), Ono H (NFRI (National Food Research Institute)), Mitsuru Yoshida (NFRI), C T. Hash (ICRISAT), Upadhyaya H (ICRISAT), Srinivasarao P (ICRISAT), Subba Reddy Belum (ICRISAT), Sahrawat L. K (ICRISAT), Osamu Ito (JIRCAS) (1175/[PDF Download](#))
- 11:35 am - 11:55 am "Effect of timing of nitrogen application on nitrogen uptake and partitioning in potted walnut trees."
Moreno Toselli (University of Bologna, Italy), Graziella Marcolini (University of Bologna), Giovambattista Sorrenti, Elena Baldi, Katherine Bravo, Donatella Malaguti, Bruno Marangoni (1374/[PDF Download](#))
- 11:55 am - 12:15 pm "Progressive wetting of initially hydrophobic plant surfaces by salts – a prerequisite for hydraulic activation of stomata?"
Juergen Burkhardt (University of Bonn, INRES-PE, Germany), Mauricio Hunsche (University of Bonn, INRES-CHS), Shyam Pariyar (University of Bonn, INRES-PE) (1260/[PDF Download](#))
- 12:15 pm - 12:45 pm "Calcium Translocation And Whole Plant Transpiration: Spatial And Temporal Measurements Using Radio-Strontium As Tracer" *Ron Seligmann (Faculty Of Agriculture, Food And Environment In Rehovot, The Hebrew University Of Jerusalem, Israel) et al. (1349/[PDF Download](#))*
- 12:45 pm - 2:00 pm Lunch (306-315) and Poster Viewing Sessions E, F (East Lobby, Rooms 309-312, 317-319)
- 2:00 pm - 2:30 pm "Factors affecting within orchard variability of nutrition, yield and quality of sweet cherry (*Prunus avium* L.)"
Gerry H. Neilsen (Pacific Agri-Food Research Centre, Canada), Denise Neilsen (Pacific Agri-Food Research Centre), Linda Herbert (Pacific Agri-Food Research Centre), Istvan Losso (Pacific Agri-Food Research Centre), Bill Rabie (Pacific Agri-Food Research Centre) (1160/[PDF Download](#))

- 2:30 pm - 2:50 pm “Greenhouse gas emissions in biogas production systems.”
Klaus Dittert (University of Kiel, Germany), Mehmet Senbayram (University of Kiel), Babette Wienforth (University of Kiel), Henning Kage (University of Kiel), Karl H. Muehling (University of Kiel) (1274/[PDF Download](#))
- 2:50 pm - 3:10 pm “Nitrogen deposition: the up and down side for production agriculture”
Pamela E. Padgett, USDA Forest Service, USA (1096/[PDF Download](#))
- 3:10 pm - 3:30 pm “High resolution imaging of in situ root hair development to assess oilseed species responses to water stress”
Warren Ashley Hammac (Washington State University, USA), William Pan (Washington State University), Ronald Bolton (Washington State University), Richard Koenig (Washington State University) (1395/[PDF Download](#))
- 3:30 pm - 4:00 pm *Coffee Break (East Lobby)*
- 4:00 pm - 4:30 pm Keynote: Petra Marschner
- 4:30 pm - 4:50 pm “A mechanistic model for understanding pH effect on phosphorus availability in rhizosphere and bulk soil.”
Nicolas Devau (Institut National de la Recherche Agronomique, France), Edith Le Cadre (INRA, France), Philippe Hinsinger (INRA, France), Frédéric Gérard (INRA, France) (1258/[PDF Download](#))
- 4:50 pm - 5:10 pm “Comparison of corn and lupin in respect to As mobilisation, uptake and release in an arsenic contaminated floodplain soil.”
Doris Vetterlein (Helmholtz Centre for Environmental Research – UFZ, Germany), Reinhold Jahn (Martin-Luther-University Halle-Wittenberg, Germany), Jürgen Mattusch (Helmholtz Centre for Environmental Research) (1142/[PDF Download](#))
- 5:10 pm - 5:30 pm “Effects of plant growth-promoting Rhizobacteria and Rhizobium on mycorrhizal development and growth of *Paraserianthes falcataria* (L.) Nielsen seedlings in two types of soils with contrasting levels of pH.”
Yusran Yusran (University of Hohenheim, Germany), Volker Roemheld (University of Hohenheim, Germany), Torsten Mueller (University of Hohenheim, Germany) (1098/[PDF Download](#))
- 5:30 pm - 6:00 pm Chair led discussion and introduction to poster sessions F, H

August 30th, Detailed Program Session G: Element Toxicity and Remediation**Chair: Leon Kochian (Room 307-308)**[Session G Poster PDFs >>](#)

- 10:45 am - 11:15 am Keynote: "Metabolomic and proteomic analysis of manganese sensitivity and tolerance in the tropical legume cowpea (*Vigna unguiculata*)."
Hendrik Führs (Leibniz University Hannover, Germany), Joachim Kopka (Max-Planck-Institute of Molecular Plant Physiology, Germany), Hans-Peter Braun (Leibniz University Hannover), Walter Johannes Horst (Leibniz University Hannover) (1068/[PDF Download](#))
- 11:15 am - 11:35 am "Quantitative trait loci for reducing sugar concentration in the barley root tip under boron toxicity."
Bao-Lam Huynh (University of South Australia and the Australian Centre for Plant Functional Genomics), Margaret Pallotta (Australian Centre for Plant Functional Genomics), Eun-Young Choi (National Institute of Horticultural and Herbal Science), Trevor Garnett (Australian Centre for Plant Functional Genomics), Robin Graham (Flinders University, Australia), James Stangoulis (Flinders University) (1330/[PDF Download](#))
- 11:35 am - 11:55 am "Genetic Improvement in Crop Phosphorus Efficiency: A Case Study on Purple Acid Phosphatases in Common Bean." *Jiang Tian (Root Biology Center), Cuiyue Liang (Root Biology Center), Xiaolong Yan (Root Biology Center), Hong Liao (South China Agricultural University) (1129/[PDF Download](#))*
- 11:55 am - 12:15 pm "Zinc fertilization plus liming to reduce cadmium uptake by Romaine lettuce on Cd-mineralized lockwood soil."
Rufus L. Chaney (USDA-ARS), Carrie E. Green (USDA-ARS), Husein A. Ajwa (University of California, Davis, USA), Richard F. Smith (University of California Cooperative Extension) (1252/[PDF Download](#))
- 12:15 pm - 12:45 pm "A major gene for leaf cadmium accumulation in maize (*Zea mays* L.)."
Roberta Soric (University of Osijek, Croatia), Zdenko Loncaric (University of Osijek), Vlado Kovacevic (University of Osijek), Ivan Brkic (Agricultural Institute Osijek), Domagoj Simic (Agricultural Institute Osijek) (1188/[PDF Download](#))
- 12:45 pm - 2:10 pm Lunch (306-315) and Poster Viewing Sessions G,H (East Lobby, Rooms 309-312, 317-319)
- 2:10 pm - 2:40 pm Keynote: "The effect of the AltSB gene on root growth in nutrient solution of isogenic sorghum hybrids."

Robert E. Schaffert (Embrapa Maize and Sorghum, Brazil), Lidianne A. Silva (Universidade Estadual Paulista, Brazil), Vera M.C. Alves (Embrapa Maize and Sorghum), Geraldo A. Carvalho Jr. (Universidade Federal Viçosa, Brazil), Jurandir V. Magalhães (Embrapa Maize and Sorghum) (1266/[PDF Download](#))

- 2:40 pm - 3:00 pm “Non-invasive imaging and characterization of absorption, transport and accumulation of cadmium in an intact rice plant.”
Shu Fujimaki (Japan Atomic Energy Agency), Nobuo Suzui (Japan Atomic Energy Agency), Noriko S. Ishioka (Japan Atomic Energy Agency), Naoki Kawachi (Japan Atomic Energy Agency), Sayuri Ito (Japan Atomic Energy Agency), Mitsuo Chino (Akita Prefectural University, Japan), Shin-ichi Nakamura (Akita Prefectural University) (1218/[PDF Download](#))
- 3:00 pm - 3:20 pm “Isolation of Arabidopsis thaliana mutants sensitive to excess boron.”
Takuya Sakamoto (University of Tokyo, Japan), Yayoi T. Inui (University of Tokyo), Toru Fujiwara (University of Tokyo, CREST, JST, Japan) (1126/[PDF Download](#))
- 3:20 pm - 3:40 pm “Characterization of OsNramp1, a metal transporter from rice.”
Ryuichi Takahashi (University of Tokyo, Japan), Yasuhiro Ishimaru (University of Tokyo), Takeshi Senoura (University of Tokyo), Hugo M. Shimo (University of Tokyo), Satoshi Mori (University of Tokyo), Hiromi Nakanishi (University of Tokyo), Naoko K. Nishizawa (University of Tokyo) (1180/[PDF Download](#))
- 3:40 pm - 4:00 pm “The molecular basis for Zn hyperaccumulation in *Thlaspi caerulescens*.”
Matthew J. Milner (Cornell University, USA), Leon Kochian (Robert W. Holley Center for Agriculture and Health, USA) (1410/[PDF Download](#))
- 4:00 pm - 4:30 pm Keynote: “Barley metal ion transport proteins involved in manganese acquisition and homeostasis.”
Pai Pedas (Copenhagen University, Denmark), Anne H. Ladegaard (Copenhagen University), Michaela Schiller (Copenhagen University), Jan K. Schjoerring (Copenhagen University), Søren Husted (Copenhagen University) (1253/[PDF Download](#))
- 4:30 pm - 4:50 pm Chair Led Discussion

August 30th, Detailed Program Session H: Nutrient Management and the Sustainability of Agriculture in the Developing World (Sponsored by the Journal of Plant Nutrition and Soil Science)

Chairs: Johan Six, Andreas Buerkert, Walter Horst (Room 313-314)

[Session H Poster PDFs >>](#)

- 10:45 am - 11:15 am Keynote: "Integrated nutrient management for sustainable agriculture in China"
Mingsheng Fan (China Agricultural University), Fusuo Zhang (China Agricultural University, Corresponding author), Rongfeng Jiang (China Agricultural University) (1366/[PDF Download](#))
- 11:15 am - 11:35 am "Determining total N deposition in a winter wheat and maize cropping system." *He Chune, Xuejun Liu (China Agricultural University), Andreas Fangmeier (University of Hohenheim, Germany), Fusuo Zhang (China Agricultural University) (1172/[PDF Download](#))*
- 11:35 am - 11:55 am "Role of added carbon in the transformation of surplus soil nitrate-nitrogen to organic forms in an intensively managed calcareous soil"
Shaojun Qiu, Xiaotang Ju (China Agricultural University), J Ingversen, Z.D Guo, C Stange, R Bisharat, T Streck, P Christie, F.S Zhang (1166/[PDF Download](#))
- 11:55 am - 12:15 pm "Reducing the effect of iron toxicity in lowland rice through banding and fertilizer application."
Amit K. Srivastava (University of Bonn, Germany), Claude Kanninkpo, Thomas Gaiser (1053/[PDF Download](#))
- 12:15 pm - 12:45 pm Keynote: "Agronomic approaches in biofortification of food crops with micronutrients in the developing world."
Ismail Cakmak (Sabanci University, Turkey) (1451/[PDF Download](#))
- 12:45 pm - 2:10 pm Lunch (306-315) & Poster Viewing Sessions G, H (East Lobby, Rooms 309-312, 317-319)
- 2:10 pm - 2:40 pm Keynote: "Constraints and new opportunities for achieving a green revolution in Sub-Saharan Africa through Integrated Soil Fertility Management"
Andre Bationo, Alliance for a Green Revolution in Africa (1446/[PDF Download](#))
- 2:40 pm - 3:00 pm "Agronomic evaluation of nutrient management for potato in Northwest China," *Shutian Li (International Plant Nutrition Institute, Beijing; Institute of Agricultural Resources and Regional Planning, Chinese Academy of*

Agricultural Sciences, Beijing) (1103/[PDF Download](#))

- 3:00 pm - 3:20 pm “Switchgrass for forage and bioenergy.”
I. Effects of nitrogen rate and harvest system: Maru K. Kering (The Noble Foundation, USA), Jon T. Biermacher (The Noble Foundation), Billy J. Cook (The Noble Foundation), John A. Guretzky (The Noble Foundation) (1158/[PDF Download](#))
II. Effects of P and K fertilization: John A. Guretzky (The Noble Foundation), Maru K. Kering (The Noble Foundation), Jon T. Biermacher (The Noble Foundation), Billy J. Cook (The Noble Foundation) (1318/[PDF Download](#))
- 3:20 pm - 3:40 pm “Effect of continuous cropping on changes in crop productivity nutrient budgets and soil properties with and without FYM under pearl millet - mustard – cowpea cropping sequence”
Kishorbhai Parsottam Patel (Anand Agricultural University, India), Puspkant K. Swarnkar , Mahavir Singh (1064/[PDF Download](#))
- 3:40 pm - 4:10 pm “Challenges for plant nutrition management from the fertilizer industry’s view point,”
Luc Maene, President, International Fertilizer Industry Association (1449/[PDF Download](#))
- 4:10 pm - 4:30 pm Keynote: “Determinants of sustainability in urban and peri-urban agriculture,” *Andreas Buerkert (University of Kassel, Germany), Eva Schlecht (University of Kassel & University of Goettingen, Germany), Martina Predotova (University of Kassel, Germany), Rodrigue V.C. Diogo (University of Kassel, Germany), Katja Kehlenbeck (ICRAF, Nairobi, Kenya), Jens Gebauer (University of Kassel, Germany) (1431/[PDF Download](#))*
- 4:30 pm - 4:50 pm Chair Led Discussion