

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

August 27th

General Session: Main Hall (Room 306)

- 7:00 am - 7:00 pm Registration
- 8:30 am - 9:00 am Welcome and Opening
- 9:00 am - 9:50 am Opening Address
- 9:50 am - 10:20 am Coffee

General Session: Main Hall (Room 306)

- 10:20 am - 11:05 am “Mechanisms of iron homeostasis in plants and their regulations”
Dr. Jean-Francois Briat, CNRS-INRA Montpellier, France
- 11:05 am - 11:50 am “Maximizing (productivity and efficiency) in contemporary agriculture”
Dr. Paul Fixen Fixen, International Plant Nutrition Institute (1291)

Lunch: Exhibit Hall A (adjacent to main lecture hall)

- 11:50 am - 1:20 pm Lunch and Poster and Exhibit Viewing

Thematic Sessions (occurring concurrently)

- 1:20 pm - 6:00 pm Session A: Nutrient acquisition, homeostasis and source-sink relations
(See session details below)
- 1:20 pm - 6:00 pm Session B: Nutrient Management for Optimal Productivity and
Sustainability (See session details below)

Poster Viewing Session

- 6:00 pm - 8:00 pm Poster View and Hosted Happy Hour
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Session A: Nutrient Acquisition, Homeostasis and Source-Sink Relations (Room 307)

Chairs: Nico von Wirén & Stefan Abel

- 1:20 pm - 1:50 pm Keynote: “Silicon uptake and translocation in plants”
Dr. Jian-Feng Ma, Okayama University, Japan. (1139)
- 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 $\text{Ca}^{2+}/\text{H}^{+}$ Antiporters.”
Simon J. Conn (University of Adelaide, Australia), Matthew Gilliam, Stephen Tyerman, Brent Kaiser, Roger Leigh (1275)
- 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)
- 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)
- 2:50 pm - 3:10 pm Talk 4: To be announced
- 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)
- 3:30 pm - 4:00 pm *Coffee Break: Main 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

- 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)
- 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)
- 5:10 pm - 5:30 pm Talk 8: To be announced
- 5:30 pm - 6:00 pm Chair led discussion and introduction to poster session

Session B: Nutrient Management for Optimal Productivity and Sustainability
Chairs: Sylvie Brouder, Tim Hartz, Ciro Rosolem

- 1:20 pm - 1:50 pm Keynote: Do long-term experiments provide the key to sustainable soil productivity?
Bert Janssen, Wageningen University, The Netherlands
- 1:50 pm - 2:10 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)
- 2:10 pm - 2:30 pm Talk 3: To be announced
- 2:30 pm - 2:50 pm “More hidden hunger: Special nutrient needs to plants based on their structure and function.”
Dale Blevins, University of Missouri, USA (1093)
- 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) (1265)
- 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)

- 3:30 pm - 4:00 pm *Coffee Break: Main Lobby*
- 4:00 pm - 4:30 pm Keynote: "Nutrient use efficiency in Bioenergy cropping systems: Critical research questions"
Purdue University faculty member, to be announced
- 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)
- 4:50 pm - 5:10 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)
- 5:10 pm - 5:30 pm "Efficient N management for concentrated vegetable crop production: A synthesis of the effectiveness of common BMPs and associated environmental challenges"
Tim Hartz, University of California, Davis, USA
- 5:30pm - 6:00 pm Chair led discussion and introduction to poster session

August 28th

General Session: Main Hall (Room 306)

- 8:30 am - 9:15 am “Nitrogen Cycling and Climate Change”
Dr. Arnold Bloom, University of California, Davis, USA
- 9:15 am - 10:00 am “Rethinking the principles and practices of nutrient monitoring and field testing”
Dr. Patrick Brown, University of California, Davis, USA
- 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

Thematic Sessions (occurring concurrently)

- 11:15 am - 12:45 pm Session C: Functions, Interactions and Diagnosis of Plant Nutrient Status (See session details below)
- 11:15 am - 12:45 pm Session D: Impact of Environmental Stresses on Plant Nutrition (See session details below)

Lunch: Exhibit Hall A (adjacent to main lecture hall)

- 12:45 pm - 2:05 pm Lunch and Poster and Exhibit Viewing

Thematic Sessions (occurring concurrently)

- 2:05 pm - 5:30 pm Session C: Functions, Interactions and Diagnosis of Plant Nutrient Status (See session details below)
- 2:05 pm - 5:30 pm Session D: Impact of Environmental Stresses on Plant Nutrition (See session details below)

Poster Viewing Session

- 5:30 pm - 7:00 pm Poster Viewing Session and Hosted Happy Hour

Banquet (California Railroad Museum)

7:45 pm - 11:00 pm Conference Banquet and Epstein Dinner

**Session C: Functions, Interactions and Diagnosis of Plant Nutrient Status
(Room 308)**

Chairs: Javier Abadia & Jan Schoering

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)

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)

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)

12:25 pm - 12:45 pm "Evaluating red edge vegetation indices for estimating winter wheat N status under high canopy coverage condition"
Fei Li (China Agricultural University & Inner Mongolia Agricultural University), Yuxin Miao (China Agricultural University), Martin L. Gnypl (University of Cologne, Germany), Simon D. Hennig (University of Cologne, Germany), Xinping Chen (China Agricultural University), Liangliang Jia (Hebei Academy of Agricultural and Forestry Sciences, China), Georg Bareth (University of Cologne) (1301)

12:45 pm - 2:05 pm *Lunch and Poster Viewing*

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)

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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)

- 2:35 pm - 3:05 pm Keynote: "Boron transport in plants: coordinated regulation of transporters"
Kyoko Miwa , Toru Fujiwara (University of Tokyo, Japan) (1283)
- 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)
- 3:25 pm - 3:45 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)
- 3:45 pm - 4:10 pm *Coffee Break*
- 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 Científicas, 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)
- 4:40 pm - 5:00 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)
- 5:00 pm - 5:30 pm Chair led discussion and introduction to poster session

Session D : Impact of Environmental Stresses on Plant Nutrition (Room 309)
Chairs: To Be Announced

- 11:15 am - 11:45 am Keynote: "Genetic Dissection of the Ionome."
David Salt, Purdue University, USA
- 11:45 am - 12:05 pm Steffen Abel, University of California, Davis, USA

- 12:05 pm - 12:25 pm 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 and Poster Viewing
- 2:05 pm - 2:35 pm Keynote: Emanuel Epstein, University of California, Davis, USA
- 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)
- 3:05 pm - 3:25 pm 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)
- 3:45 pm - 4:10 pm *Coffee Break: Main Lobby*
- 4:10 pm - 4:40 pm Keynote: Basil Nikolau, Iowa State University, USA
- 4:40 pm - 5:00 pm Uzi Kafkafi, The Hebrew University of Jerusalem, Israel
- 5:00 pm - 5:30 pm Chair led discussion and introduction to poster session

August 29th

General Session: Main Hall (Room 306)

- 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
- 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
- 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
- 10:15 am - 10:45 am *Coffee Break: Main Lobby*

Thematic Sessions (occurring concurrently)

- 10:45 am - 12:35 pm **Session E: Plant Nutrition for Human Health** (See session details below)
- 10:45 am - 12:35 pm **Session F: Environmental Plant Nutrition – Trees, Roots and Climate** (See session details below)

Lunch: Exhibit Hall A (adjacent to main lecture hall)

- 12:35 pm - 2:00 pm **Lunch and Poster and Exhibit Viewing**

Thematic Sessions (occurring concurrently)

- 2:00 pm – 6:00 pm **Session E: Plant Nutrition for Human Health** (See session details below)
- 2:00 pm – 6:00 pm **Session F: Environmental Plant Nutrition – Trees, Roots and Climate** (See session details below)

Poster Viewing Session

- 6:00 pm - 8:00 pm **Poster Viewing Session and Hosted Happy Hour**

8:00 pm - 11:00 pm IPNC Board, IPNI and Speakers Dinner

Session E: Plant Nutrition for Human Health (Room 308)

Chairs: To Be Announced

- 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)
- 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)
- 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)
- 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)
- 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)
- 12:35 pm - 2:00 pm *Lunch: Exhibit Hall A (adjacent to main lecture hall)*
- 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)
- 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)

- 2:50 pm - 3:10 pm “Differences among soybean cultivars with regard to the cadmium accumulation patterns in various organs.”
Megumi Sugiyama (National Institute for Agro-Environmental Sciences, Japan), Noriharu AE (Kobe University, Japan) (1304)
- 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)
- 3:30 pm - 4:00 pm *Coffee Break: Main 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)
- 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)
- 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)
- 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)

5:30 pm - 6:00 pm Chair led discussion and introduction to poster session

Session F: Environmental Plant Nutrition – Trees, Roots and Climate

Chairs: To Be Announced

10:45 am - 11:15 am Keynote: “Potassium Nutrition of Trees and its Effect on wood formation in poplar.”

Joerg Fromm (1419) Sponsored by Tree Physiology.

11:15 am - 11:35 am Talk 2: To be announced

11:35 am - 11:55 am “Effect of timing of nitrogen application on nitrogen uptake and partitioning in potted walnut.”

Moreno Toselli (University of Bologna, Italy), Graziella Marcolini (University of Bologna), Giovambattista Sorrenti, Elena Baldi, Katherine Bravo, Donatella Malaguti, Bruno Marangoni (1374)

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)

12:15 pm - 12:45 pm Keynote: "Regulation of nitrogen nutrition at the whole tree level"

Heinz Rennenberg, University of Freiburg, Germany

12:45 pm - 2:00 pm *Lunch*

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)

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)

2:50 pm - 3:10 pm “Nitrogen Deposition: the up and down side for production agriculture”

Pamela E. Padgett, USDA Forest Service, USA (1096)

- 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)
- 3:30 pm - 4:00 pm *Coffee Break*
- 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)
- 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)
- 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)
- 5:30 pm - 6:00 pm Chair led discussion and introduction to poster session

August 30th

General Sessions Main Hall (Room 306)

- 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
- 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
- 10:15 am - 10:45 am *Coffee Break: Main Lobby*

Thematic Sessions (occurring concurrently)

- 10:45 am - 12:45 pm Session G: Element Toxicity and Remediation (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) (See session details below)

Lunch: Exhibit Hall A (adjacent to main lecture hall)

- 12:45 pm - 2:10 pm Lunch and Poster and Viewing

Thematic Sessions (occurring concurrently)

- 2:10 pm - 4:50 pm Session G: Element Toxicity and Remediation (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) (See session details below)
- 4:50 pm - 5:10 pm Coffee

Closing Session

5:10 pm - 6:00 pm "High and low affinity" ion uptake in plants: an ecological perspective viewed 50 years later."
Bob Jefferies, University of Toronto, Canada

6:00 pm - 6:15 pm IPNC XVII: Ismail Cakmak, *Sabanci University, Turkey*

6:15 pm - 6:45 pm Awards Ceremony and Closing

Session G: Element Toxicity and Remediation

Chairs: To Be Announced

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)

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)

11:35 am - 11:55 am "Silicon-mediated alleviation of cadmium toxicity in roots of *Brassica chinensis* is mainly attributable to silicon-enhanced antioxidant defense capacity and silicon-suppressed oxidative damage."
Alin Song (Nanjing Agricultural University, China), Zhaojun Li (The Chinese Academy of Agricultural Sciences), Yongchao Liang (The Chinese Academy of Agricultural Sciences) (1043)

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)

12:15 pm - 12:35 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)

12:35 pm - 12:45 pm Poster Introduction

12:45 pm - 2:10 pm Lunch

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)

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)

3:00 pm - 3:20 pm "Isolation of Arabidopsis thaliana mutants sensitive to excess boron. Sakamoto and Fujiwara."
Takuya Sakamoto (University of Tokyo, Japan), Yayoi T. Inui (University of Tokyo), Toru Fujiwara (University of Tokyo, CREST, JST, Japan) (1126)

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)

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)

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)

4:30 pm - 4:50 pm Chair Led Discussion

**Session H: Nutrient Management and the Sustainability of Agriculture in the Developing World (Sponsored by the Journal of Plant Nutrition and Soil Science)
Chairs: To Be Announced**

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) (1121)

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)*

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 (1313)

11:55 am - 12:15 pm "Reducing the effect of iron toxicity in lowland rice through bunding and fertilizer application."
Amit K. Srivastava (University of Bonn, Germany), Claude Kanninkpo, Thomas Gaiser (1053)

12:15 pm - 12:35 pm Keynote: "Agronomic Approaches in Biofortification of Food Crops with Micronutrients in the Developing World."
Ismail Cakmak (Sabanci University, Turkey)

12:35 pm - 12:45 pm Poster Introduction

12:45 pm - 2:10 pm Lunch

2:10 pm - 2:40 pm Keynote: Andre Bationo, Alliance for a Green Revolution in Africa

2:40 pm - 3:00 pm "Potassium conservation in tropical production systems."
Ciro A. Rosolem and Rodrigo A. Garcia, São Paulo State University, Brazil

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)

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)

- 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)
- 3:40 pm - 4:00 pm “Obligations and opportunities for global investment in African Plant Nutrition”
Luc Maene, President, International Fertilizer Industry Association
- 4:00 pm - 4:30 pm Keynote: Andreas Buerkert, University of Kassel, Germany
- 4:30 pm - 4:50 pm Chair Led Discussion