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## 2014 SCHOLAR AWARD RECIPIENTS ANNOUNCED BY INTERNATIONAL PLANT NUTRITION INSTITUTE

**September 26, 2014 – Peachtree Corners, Georgia, USA** – The winners of the International Plant Nutrition Institute's (IPNI) 2014 Scholar Award have been selected.

We have had another record response to our Scholar Award program this year," said Dr. Terry L. Roberts, IPNI President. The global representation of universities and the wide array of fields of study that were represented in this year's submissions were impressive. The academic institutions these young people represent, and their professors and advisers, can be proud of their student's accomplishments. Our selection committee adheres to rigorous guidelines in considering important aspects of each applicant's academic and personal achievements."

In total, 30 graduate students were named to receive the IPNI Scholar Award in 2014. Each Scholar receives the equivalent of US\$2,000.

Graduate students attending a degree-granting institution located in any country within an IPNI regional program are eligible. The award is available to graduate students in science programs relevant to plant nutrition science and the management of crop nutrients including: agronomy, horticulture, ecology, soil fertility, soil chemistry, crop physiology, environmental science, and others.

Regional committees of IPNI scientific staff select the recipients of the IPNI Scholar Award. The awards are presented directly to the students at a preferred location and no specific duties are required of them.

Funding for the scholar award program is provided through support of IPNI member companies, primary producers of nitrogen, phosphate, potash, and other fertilizers.

More information is available from IPNI staff, individual universities, or from the IPNI website: [www.ipni.net/awards](http://www.ipni.net/awards)

The winners are listed below by Region and University or Institution.

### **Australia/ New Zealand**

- Ms. Courtney Peirce, The University of Adelaide, Australia
- Ms. Karthika Krishnasamy, Murdoch University, Australia

### **China**

- Mr. Ai Chao, Chinese Academy of Agricultural Sciences, Beijing, China
- Mr. Pan Junfeng, Anhui Agricultural University, Anhui, China
- Ms. Hao Yanshu, Huazhong Agricultural University, Hubei, China
- Ms. Chen Yanling, China Agricultural University, Beijing, China
- Ms. Wang Xiao, Chinese Academy of Sciences, Hubei, China

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### **Eastern Europe and Central Asia**

- Ms. Alexandra Orekhovskaya, Belgorod State Agricultural Academy, Russia
- Ms. Gulnaz Yusupova, Bashkir State Agrarian University, Russia
- Ms. Alina Revtie, National Scientific Center “Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky”, Ukraine

### **Latin America**

- Mr. Marcelo Ferrando, Universidad de la República, Uruguay
- Ms. Geisa Lima Mesquita, Instituto Agronômico, Brazil
- Mr. Elialdo Alves de Souza, São Paulo State University, Brazil
- Mr. Juan Pablo Martinez, Universidad Nacional de Mar del Plata, Argentina
- Mrs. Elizabeth Ramirez Iglesias, Universidad Central de Venezuela, Venezuela

### **Middle East**

- Ms. Marwa Mahmoud Abd - Elbasset, Ain Shams University, Egypt

### **North America**

- Ms. Sarah Page, University of Wisconsin, Madison, WI, USA
- Ms. Alexis Adams, University of Saskatchewan, Saskatoon, SK, Canada (Need Photo)
- Ms. Sarah Light, Oregon State University, Corvallis, OR, USA
- Ms. Libby Rens, University of Florida, Gainesville, FL, USA
- Ms. Anne Sawyer, University of Minnesota, St. Paul, MN, USA

### **North Africa**

- Mr. Saad Drissi, Institut Agronomique et Veterinaire Hassan II, Morocco

### **Sub-Saharan Africa**

- Ms. Obianuju Emmanuel, Kwame Nkrumah University of Science and Technology, Ghana
- Mr. Stephen Ichami Muhati, Wageningen University, Netherlands
- Mr. Yenus Kemal, Bahirdar University, Ethiopia

### **South Asia**

- Mr. Dheeraj Kumar Tiwari, C.C.S. Haryana Agricultural University, India
- Mr. Ramesh Chandra Yadav, Indian Agricultural Research Institute, India
- Mr. Krishnendu Ray, Bidhan Chandra Krishi Vishwavidyalaya, India
- Ms. Jayathunga Arachchige Surani Chathurika, Postgraduate Institute of Agriculture, Sri Lanka

### **Southeast Asia**

- Ms. Suzie Haryanti Husain, Universiti Teknologi Mara, Malaysia

Brief biographical summaries are provided below.

**Ms. Courtney Peirce**, The University of Adelaide, Australia, is working toward her Ph.D. degree in Soil Science. Her dissertation title is “Foliar fertilization of wheat plants with phosphorus.” This study is being conducted to investigate whether foliar P application can be used as an in-season top-up to tactically increase grain yields of wheat in seasons with favorable climatic conditions. This will help minimize risk for farmers in variable rainfall areas, who typically apply all their P fertilizer before sowing. For the future, Ms. Peirce aims to continue her research in crop and soil nutrition.

**Ms. Karthika Krishnasamy**, Murdoch University, Australia, is completing requirements for her doctorate degree in plant nutrition. Her dissertation title is “Wheat potassium nutrition in saline, and/or sodic soils of Western Australia.” This study will look into the role of sodium (Na) in K nutrition of wheat grown in saline/sodic soils by understanding the mechanism behind the Na replacement of K. This research has particular relevance for

rained cropping systems grown on saline and sodic soils because of the important role of K in stomatal control and in plant water relations. In the future, Ms. Krishnasamy aims to become an independent plant scientist to gain knowledge and become an expert in different aspects of plant nutrition.

**Mr. Ai Chao**, Chinese Academy of Agricultural Sciences, Beijing, China, is pursuing his Ph.D. in plant nutrition. His dissertation is titled “Mechanisms of microbes-mediated carbon and nitrogen cycles in the rhizosphere soil under long-term fertilization practices.” This research aims to examine how enzyme activity (involved in C, N, P, and S cycling) and microbial community structure differ between the rhizosphere and bulk soil in a farmland ecosystem, and how each of them respond to long-term (34-year) fertilization. This work will explore the microbial mechanism for C and N turnover in the rhizosphere soil under long-term fertilization practices, and will be practically significant in developing balanced fertilization strategies. For the future, Mr. Ai plans to become an agricultural scientist.

**Mr. Pan Junfeng**, Anhui Agricultural University, Anhui, China, is working toward his Masters degree in plant nutrition. His dissertation is titled “Effect of fertilization on farmland weed seed banks,” which aims to study the effect and regulatory mechanisms of fertilization on weed persistence. Initial results from this study suggest that balanced fertilization is beneficial in not only producing high yields and better quality of agricultural products but also in stabilizing the soil weed seed bank that will ensure a reasonable, efficient and stable agro-ecosystem. Being a son of a farmer, Mr. Pan is quite interested in becoming an agricultural researcher to extend to farmers professional agricultural knowledge and scientific techniques for a sustainable and profitable agriculture.

**Ms. Hao Yanshu**, Huazhong Agricultural University, Hubei, China, is working toward her Ph.D. degree in plant nutrition. Her dissertation title is “Mechanisms of potassium uptake and distribution of photosynthates in two different potassium efficiency cotton genotypes.” This study would provide theoretical foundation for rational application of K and evidence for screening high efficiency cotton genotypes. For the future, Ms. Hao’s goal is to become an agricultural researcher specializing in environmental impact on plant nutrition.

**Ms. Chen Yanling**, China Agricultural University, Beijing, China, is pursuing a combined M.S.-Ph.D. degree in plant nutrition. Her research work is focused on determining physiological mechanism underlying high yield and efficient N utilization in maize. The research aims to investigate temporal and spatial N and dry matter accumulation and remobilization in stalk and leaves, leaf area and photosynthesis in three maize hybrids in two soils and the effect of genotype x environment interactions effect on these parameters and to understand whether and/or how N fertilization rates can regulate the coordination of grain yield and grain N concentration in high-yielding maize hybrids with different senescence characters. Ms. Chen plans to focus her future research efforts on promoting scientific techniques to improve crop yield and quality while protecting environment.

**Ms. Wang Xiao**, Chinese Academy of Sciences, Hubei, China, is working toward her doctorate degree in plant nutrition. Her dissertation is titled “Research on the mechanisms of high K use efficiency of varied genotypic cottons and their rhizospheres.” Due to the rapid depletion of soil K and increasing cost of K fertilizers, K-use efficient crop genotypes have become quite important for agricultural sustainability. This research aims to exploit the biological potential of high K-efficiency genotypes of cotton to resist adverse environmental conditions, achieve high yields, and increase water and K use efficiency. Ms. Wang intends to continue her research efforts and also educate students on plant nutrition.

**Ms. Alexandra Orekhovskaya**, Belgorod State Agricultural Academy, Russia, is working toward her Ph.D. degree in agricultural chemistry. Her research work is focused on determining N regimes of typical chernozem soils and the productivity of winter wheat depending on agro technical aspects of crop production. The accumulation of N in the soil is a characteristic feature of soil formation, and the reserves of total N in a soil determine its potential fertility. The overall goal of this research is to determine the effect of different tillage practices, mineral and organic fertilizer rates on the content of mineral N in soil as well as yield and quality of grain. For the future, Ms. Orekhovskaya’s career goal is to become an agricultural researcher and an educator.

**Ms. Gulnaz Yusupova**, Bashkir State Agrarian University, Russia, is pursuing her Ph.D. degree in agronomy. Her dissertation title is “Agroecological efficiency of application of different fertilization systems for spring rapeseed grown in a southern forest-steppe zone of the Republic of Bashkortostan.” The goal of this study is to develop a science-based system of fertilization of spring rapeseed varieties on leached chernozem soils to

provide long-term average seed yields of 2.0 to 2.5 t/ha with a crude protein content not less than 19% and also mitigating environmental nutrient pollution. In the future, Ms. Yusupova intends to pursue a career in agricultural research and teaching.

**Ms. Alina Revtie**, National Scientific Center “Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky”, Ukraine, is enrolled in a Ph.D. degree program in soil science and agrophysics. Her thesis dissertation is “Soil-environmental aspects of anhydrous ammonia application in crop production.” Application of liquid N fertilizer, such as anhydrous ammonia, not only improves productivity but also has a number of economic and technological advantages over granular N fertilizer application. The objective of this study is to understand the effect of anhydrous ammonia on soil properties and environmental parameters to help in developing a regulatory process and procedure of application of liquid N fertilizers in Ukraine. Ms. Revtie desires to continue her research efforts as well as teach students.

**Mr. Marcelo Ferrando**, Universidad de la República, Uruguay, is working toward his doctorate degree in agronomy. His dissertation is titled: “Potassium dynamics in agricultural soils: characterization of potassium reserves in soils.” The study will investigate the dynamics of K in soils under conservation tillage and develop rational guidelines for fertilizer K recommendations by comparing the different methods of estimating soil exchangeable K and non-exchangeable K. This will be done through characterizing soil mineralogy by identifying predominant clays for soils under current production, grouping these soils based on predominant clays, and studying the relationship between the results of analysis, soil characteristics and crop yields. For the future, Mr. Ferrando wishes to pursue his research efforts evaluating the efficacy of different extractants for determining different nutrients in soil.

**Ms. Geisa Lima Mesquita**, Instituto Agronômico, Brazil, is pursuing her Ph.D. degree examining the absorption and transport of B in citrus. This study is aimed at maximizing productivity of citrus and also understanding the physiological mechanisms occurring in response to B deficiency and toxicity. Ms. Mesquita’s goals are to complete her doctoral studies and pursue further studies in plant nutrition.

**Mr. Elialdo Alves de Souza**, São Paulo State University, Brazil, is completing requirements for his doctorate degree in agronomy. The focus of his research is on localized application of ammonia fertilizer to improve P utilization efficiency of corn. This research will study the impact of ammonia-N on the P use, the biochemical conditions of the rhizosphere and corn production. The results of this work will allow the development of better management practices for P fertilization. Mr. Alves de Souza wishes to pursue postdoctoral research abroad and focus his career on agricultural research and education.

**Mr. Juan Pablo Martinez**, Universidad Nacional de Mar del Plata, Argentina, is working toward his doctorate degree in agricultural sciences. His research work is focused on sustainable soybean production systems in the Pampas region of Argentina. This study will focus on developing crop management and fertilization strategies to sustainably increase soybean productivity. Mr. Martinez wishes to pursue a career in agricultural research, teaching, and extension to generate and transfer to students and farmers the best technologies related to crop production, nutrition and soil conservation.

**Mrs. Elizabeth Ramirez Iglesias**, Universidad Central de Venezuela, Venezuela, is pursuing her doctorate degree in ecological sciences. Her research work is focused on synchronizing soil-plant-animal components in low P, acid soils in the savannah agroecosystems of Venezuela. This research analyzes the impact of agroecological alternatives (like P fertilization together with maize and legume associations) on soil properties, forage production and animal response (weight gain). The study indicates positive impact of these new practices, which are being implemented taking into consideration customary practices of producers in the area (like the introduction of cattle at the beginning of the dry season to eat corn stover after harvest, etc.). Ms. Iglesias intends to pursue her postdoctoral education abroad.

**Ms. Marwa Mahmoud Abd - Elbasset**, Ain Shams University, Egypt, is working toward her doctorate degree majoring in irrigation engineering. Her research work is focused on evaluating the effect of automatic scheduling of irrigation to improve water use efficiency and crop productivity under drip irrigation system vis-à-vis the traditional irrigation methods. This study aims to fine-tune the automatic control of scheduling irrigation and fertigation. Ms. Mahmoud Abd - Elbasset wishes to travel across the world to learn and extend to farmers

new technologies related to improving water use efficiency and crop productivity.

**Ms. Sarah Page**, University of Wisconsin, Madison, WI, USA, is working toward her Masters degree in Agroecology and Horticulture. Her research looks at the potential for drip and deficit irrigation to increase irrigation water and nutrient use efficiency in potato without negatively affecting yield and quality when compared to industry standard practices. She is also exploring if N fertilizer rates can be decreased in conjunction with the use of drip irrigation. She hopes that her findings will help to identify alternative management systems for areas in which groundwater withdrawal and contamination is of particular concern. In the future, Ms. Page hopes to work with smallholder farmers to identify culturally appropriate and location-specific strategies to mitigate and adapt to climate change.

**Ms. Alexis Adams**, University of Saskatchewan, Saskatoon, SK, Canada, is pursuing her M.S. degree in soil science. Her dissertation title is “Long-term effect of fertilizer microdosing on soil fertility in the west African Sahel.” The study is focused to determine if fertilizer microdosing can be used as a best management practice in the Sahel region for long-term sustainable nutrient stewardship. Her research is in developing synchrotron science as a tool for food security research by studying the effect of nutrient and organic C sources on soil quality, along with analyzing yield data, soil chemical properties, and nutrient balances from long-term research sites in Niger and Burkina Faso. In the future, Ms. Adams intends to work alongside impoverished farmers in food-insecure countries, equipping them with techniques to overcome socioeconomic and plant nutrition related issues affecting their livelihood.

**Ms. Sarah Light**, Oregon State University, Corvallis, OR, USA, is enrolled in a M.S. degree program in soil science. Her thesis dissertation is “Growing potatoes with less inputs through better nutrient management and disease control: Developing a fertilization model for more efficient K application and alternative treatments for Verticillium wilt.” The research aims to develop a model where a normalized petiole reading can be predicted using K application source, time and rate. This should make N applications from petiole nitrate levels more efficient throughout the growing season. Ms. Light desires to work directly with farmers in some capacity, either doing agricultural research, or as a resource to farmers through the extension service, another federal government supported agency, or a private foundation.

**Ms. Libby Rens**, University of Florida, Gainesville, FL, USA, is working toward her doctorate degree in horticultural sciences. Her dissertation title is “Optimization of nitrogen fertilizer use efficiency for commercial chipping potatoes in northeast Florida.” The objective of this research is to develop strategies to increase N-fertilizer uptake efficiency of potatoes and to minimize N-fertilizer losses to the environment. This research will focus on development of best management practices to determine the right rate, right time and right placement of N-fertilizer for commercial chipping potatoes in Florida. Ms. Rens’s career goal is to be an agriculture researcher specializing in innovation of methods to optimize agricultural procedures for the production of fruits, vegetables, or staple crops.

**Ms. Anne Sawyer**, University of Minnesota, St. Paul, MN, USA, is pursuing her Ph.D. degree in soil science. Her research work is focused on “Switchgrass yield, nutrient uptake and rhizosphere microbial populations as a function of cultivar and phosphorus fertility on marginal soils in Minnesota.” Her research work focuses on developing regional best management practices for N and P fertility in switchgrass-for-biofuel production. This work will also help address the food-fuel-energy trilemma by characterizing biofuel feedstock growth on marginal lands, with the goal of retaining prime agricultural lands for food production. Ms. Sawyer’s ideal career focus will allow for research into practical solutions for environmental problems related to agriculture and, most importantly, communication and engagement with the public.

**Mr. Saad Drissi**, Institut Agronomique et Veterinaire Hassan II, Morocco, started his doctorate degree in 2013 majoring in Agronomy. His research work is focused on standardizing Zn fertilization in corn grown on coastal sandy soils in northwest Morocco. This study will help answer questions like the response of maize to Zn application and optimal levels of Zn fertilization in coastal sandy soils. Mr. Drissi intends to pursue his future research efforts with a foreign research institute specialized in plant nutrition and soil science.

**Ms. Obianuju Emmanuel**, Kwame Nkrumah University of Science and Technology, Ghana, is working toward her Ph.D. degree in soil fertility. Her dissertation title is “Response of cowpea to NPK fertilizer and rhi-

zobia inoculant in the Guinea savanna zone of Ghana.” This study is focused on improving the yield of cowpea using site-specific fertilizer recommendations and complementary use of fertilizer and rhizobia inoculation. The blanket fertilizer recommendation currently used in Ghana dates back to 1972 and doesn’t consider the complexities of weather, soil and crop interacting to affect crop production. This study will help develop localized regional fertilizer recommendations for cowpea. For the future, Ms. Emmanuel wants to be actively involved in research, teaching and mentoring youth in the field of soil science.

**Mr. Stephen Ichami Muhati**, Wageningen University, Netherlands, is pursuing his Ph.D. in production ecology and resource conservation. His dissertation is titled “Refining fertilizer use recommendations for smallholder maize fields in African landscapes.” The main objective of this study is to develop and test a novel methodology based on the diagnosis of soil nutrient constraints for better targeting fertilizer use recommendations to local conditions rather than the current blanket recommendations. In this study, maize is being as test crop because it is a staple food in many sub-Saharan countries. Mr. Muhati seeks research opportunities that will help him better understand the spatial and temporal aspects of smallholder farming systems.

**Mr. Yenus Kemal**, Bahirdar University, Ethiopia, is working toward his doctorate degree in agronomy. His dissertation title is “Improving sustainable productivity of chickpea through supplemental irrigation and integrated nutrient management options in Vertisols of western Ethiopia.” The general objective of this proposed research is to improve chickpea yields sustainably through supplemental irrigation and integrated nutrient management strategies, which in turn will improve farmer profits. For the future, Mr. Kemal’s goal is to scale up the best and permissible nutrient management options for higher crop yields in Ethiopia.

**Mr. Dheeraj Kumar Tiwari**, C.C.S. Haryana Agricultural University, India, is pursuing his Ph.D. in Agronomy since 2013. His dissertation is titled “Performance of maize hybrids under different planting methods and nitrogen levels.” The focus of his research is on evaluating the effect of N levels on growth and yield of maize hybrids under different planting methods and of planting methods and N levels on economics, quality and physicochemical properties of soil. In the future, Mr. Tiwari wants to become a research scientist in an international organization.

**Mr. Ramesh Chandra Yadav**, Indian Agricultural Research Institute, India, is working toward his doctorate degree in soil science. The focus of his research is on the development and testing of nano-based novel carriers of N for enhancing its use efficiency and reducing greenhouse gas emissions under elevated carbon dioxide and temperatures. It is expected that this study will lead to the development of nano-clay composites that can then be used as slow-release N fertilizers to improve N use efficiency and mitigate the effect of climate change on crop productivity. Mr. Yadav aims to establish a career in agricultural research and contribute to the well being of the farming community.

**Mr. Krishnendu Ray**, Bidhan Chandra Krishi Viswavidyalaya, India, is completing requirements for his doctorate degree in agronomy. His dissertation title is “Site-specific nutrient management for improving nutrient use efficiency in hybrid rabi maize cultivars in the lower Gangetic plains.” This study will evaluate the impact of site-specific nutrient management on growth, yield and quality of maize by managing large spatial and temporal variability observed in smallholder farming systems. In the future, Mr. Ray wishes to extend his research further and quantify soil-plant-atmosphere interactions for better crop and soil management.

**Ms. Jayathunga Arachchige Surani Chathurika**, Postgraduate Institute of Agriculture, Sri Lanka, is working toward a Ph.D. degree in soil science. Her dissertation is titled “Improving soil fertility of low productive lands by beneficial management practices for maize.” The main objective of her study is to identify beneficial management practices to improve soil fertility of marginal agricultural lands. This research will help to develop approaches to improve C sequestration using available resources, thereby improving the overall soil fertility to support higher crop yields on marginal agricultural lands in the long-run. For the future, Ms. Chathurika wishes to pursue a career in soil science research and extension.

**Ms. Suzie Haryanti Husain** from Faculty of Plantation and Agrotechnology, Universiti Teknologi Mara (UiTM), Malaysia is working toward her doctorate degree in Plantation Management majoring in Agronomy. Her research dissertation is titled “Uptake and distribution of boron in young and matured oil palm of different genotypes as affected by nitrogen fertilization.” This research aims to look into the pattern of B uptake in eight

most popular oil palm varieties widely planted in Malaysia and will also assess the effect of applying different rates of N on B uptake and distribution in the crop. The study will help in the overall fertilizer management and improve not only the oil palm yield but also the nutrient use efficiency. Ms. Husain aims to pursue further education in agronomy keeping her focus on plant nutrition.

*Abbreviations: N = nitrogen; P = phosphorus; K = potassium; S = sulfur; C = carbon; B = boron; Zn = zinc.*

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*Contact IPNI for photos of each scholar.*

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