



FOR IMMEDIATE RELEASE

2012 SCHOLAR AWARD RECIPIENTS ANNOUNCED BY IPNI

The 2012 winners of the Scholar Award sponsored by the International Plant Nutrition Institute (IPNI) have been selected.

“We are very pleased at the growing interest for our Scholar Award competition, which has once again attracted many high quality applicants from a diverse mix of agricultural research centers—this year located in Argentina, Australia, Brazil, China, India, Russia, South Africa, Sri Lanka, Uruguay, and the United States,” said Dr. Terry L. Roberts, IPNI President. “Being selected from this group is a great accomplishment that each student should be proud of, as should their advisers, professors, and supporting institutions. Our selection committee adheres to rigorous guidelines in considering important aspects of each applicant’s academic achievements.”

The individual awards of USD 2,000 are available to graduate students in sciences relevant to plant nutrition and management of crop nutrients. The following 24 graduate students (listed by region) were named to receive the IPNI Scholar Award in 2012.

AFRICA: Ms. Tesha Mardamootoo is completing her Ph.D. degree at the University of the Free State, Bloemfontein, South Africa. Her dissertation entitled “Developing an index for phosphorus loss from sugarcane soils in Mauritius” aims at integrating source and transport factors to produce a simple decision support tool (the P index) for agronomists, extension officers, or farmers to reliably predict the potential contribution of farm and management practices on eutrophication. The tool will help to identify where beneficial management practices should be targeted to reduce the incidence of accelerated eutrophication. For the future, Ms. Mardamootoo hopes to contribute to the scientific understanding necessary for a better synchrony between agricultural use of nutrients and environmental protection.

AUSTRALIA & NEW ZEALAND: Mr. Jian Jin is pursuing his Ph.D. in Agronomy at La Trobe

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University in Melbourne, Australia. His dissertation is titled “Effect of phosphorus supply on plant phosphorus acquisition under elevated carbon dioxide,” which aims to investigate the mechanisms of P and CO₂ interaction to devise appropriate strategies for P fertilization of farming systems in response to climate change and variability. With an improved understanding of the rhizosphere processes under elevated CO₂, management of soil quality and crop productivity in farming systems could be optimized and may become more predictable with climate change. Mr. Jin wishes to develop his research capabilities further by studying how legumes physiologically respond to nutrient-deficient soils, and the processes of plant-soil-microbe interactions.

Ms. Humaira Sultana is working toward her Ph.D. degree in Agronomy at The University of Melbourne in Melbourne, Australia. Her dissertation title is “Nitrogen fertilizer management—an integrated approach to enhanced efficiency fertilizers.” The major objective of this study is to evaluate the management potential of fertilizer related strategies with emphasis on enhanced efficiency fertilizers (EEFs) and related products like urease inhibitors and nitrification inhibitors in both pasture and cropping systems. Since the response mechanism of EEFs is very complex and demands a comprehensive system-based approach, this research combined quantitative analysis, experiments, and modeling to address N related issues in Australian agricultural systems. For the future, Ms. Sultana’s goal is to pursue a career in research working on the agronomic management of cropping systems.

CHINA: Ms. Weini Wang is in a combined M.Sc. - Ph.D. program in plant nutrition at Huazhong Agricultural University in Wuhan, China. Her dissertation is titled “Regional evaluation of fertilization effects of nitrogen, phosphorus, potassium and estimating appropriate fertilizer application rates for rice production: A case study of Hubei province.” Some objectives of her study include assessing variation in soil fertility among paddy fields, evaluating fertilizer use efficiency of rice, establishing predictors and classification systems of indigenous soil nutrient supply capacity in paddy fields, developing appropriate fertilizer recommendation methods, and estimating optimum fertilizer application rates for rice over large domains. For the future, Ms. Wang intends to continue research and extension efforts to improve crop yields and farmer profits.

Mr. Guangjie Li is pursuing his Ph.D. in Molecular Genetics of Plant Nutrition at the Institute of Soil Science, Chinese Academy of Science in Nanjing, China. His dissertation title is “Study on the

mechanisms of plant's adaptation to high ammonium and low potassium stress by using genetic mutation technique." A native of Jinan, Shandong province, Mr. Guangjie's research is focused on evaluating mechanisms to optimize K absorption efficiency of the plant so as to improve the plant's ability to adapt to high NH_4 conditions resulting from a continuous overuse of N fertilizer on farms. In the future, Mr. Guangjie hopes to be in a faculty position at a leading university and continue research and extension work on plant nutrition.

Mr. Zhanjun Liu is working toward a Ph.D. in plant nutrition at the Graduate School of the Chinese Academy of Agricultural Sciences in Beijing, China. His research work is on the characteristics and assessment of soil quality of low-yielding paddy soils in South China. The work is aimed at finding out the limiting factors and improving rice yields by determining the scale and distribution of paddy farms, analyzing soil samples for their physical, chemical, and biological properties, and building a database for future use in South China. Mr. Liu's career goal is to become an agricultural scientist to increase crop yields, improve farmer profits, and improve agricultural sustainability.

Mr. Yunfeng Peng is working on a Ph.D. at China Agricultural University in Beijing, China. His dissertation is titled "Effect of nitrogen supplies on root and mineral nitrogen distribution in soil profile and carbon/nitrogen interactions between source and sink of field-grown maize." The main objectives of this study are: (a) comparing root distribution of N efficient and inefficient maize inbred lines in a soil with sufficient N supplies, (b) examining plant N uptake, temporal and spatial distributions of maize roots, and mineral N concentration in the soil profile during whole maize growth period, and (c) investigating allocation and remobilization of carbohydrates and N between leaf and developing ear under field conditions. Mr. Peng's career goal is to become an agricultural scientist to study crop growth responses to nutrient stress and develop new crop management practices to increase crop yields and enhance fertilizer use efficiency.

EASTERN EUROPE & CENTRAL ASIA: Ms. Anastasia Dolgodvorova is working towards her M.Sc. degree in Soil Science and Agricultural Chemistry at the Moscow State University, Moscow, Russia. It will be completed in 2013. Her research work is titled "Biofortification of cereal grains with selenium." She is studying the effect of foliar application of Se on its accumulation in spring wheat and spring barley plants and interactions with other nutrients in both field and pot experiments. The

experimental data obtained in her studies are helpful in recommending the optimal rate of Se to be applied to both cereal crops. For the future, Ms. Dolgodvorova intends to continue her research efforts to improve plant nutrition with micronutrients and especially with Se.

Ms. Alina Arginbaeva is working toward her M.Sc. degree in Agricultural Ecology at the Bashkir State Agrarian University, Ufa, Russia. It will be completed in 2013. Her research work is titled “Effect of soil tillage methods and fertilizer use on soil fertility of leached chernozem in the Southern forest-steppe of the Republic of Bashkortostan.” She is studying the effect of no-till systems and other conservation tillage methods on organic matter and nutrient status in the soil, including available P and K, in the long-term field experiment conducted by the University. The important target of her work is to develop recommendations for both mineral and organic fertilizer use to spring wheat under conservation tillage systems for obtaining high grain yield with high quality. Ms. Arginbaeva plans to start her Ph.D. program on conservation tillage methods at the same university that will allow adjusting such systems to the regional conditions.

Ms. Elena Yakovleva completed her M.Sc. degree in Agricultural Chemistry and Soil Science at the Kuban State Agrarian University, Krasnodar, Russia in July 2012. Her thesis title is “Optimization of mineral nutrition of winter wheat grown on leached chernozem in the Northwestern Caucasus through the use of innovative chelate complexes of micronutrients.” The major objective of this study is to evaluate the effect of foliar application of chelate complexes of micronutrients (Mn, Cu, Zn, and Co) and physiologically active organic acids on winter wheat grain yield and its quality. The high efficiency of these new micro-fertilizers was demonstrated in a short-term field experiment. The important results of the study are the recommendations on both rates and time of fertilizer application for obtaining high grain yield with high gluten and protein content. For the future, Ms. Yakovleva’s goal is to continue research work on crop nutrition with micronutrients starting a Ph.D. program at the same University.

NORTH AMERICA: Mr. Matt Yost is working toward his Ph.D. in applied plant sciences at University of Minnesota in St. Paul, USA. His research work has consisted of nearly 44 on-farm research experiments where he has investigated the effects of tillage, alfalfa regrowth, manure, K fertility, and residue management on the N fertilizer requirement of corn following alfalfa. He also is conducting a

meta-analysis of alfalfa-corn literature and a statewide survey in order to improve the prediction and adoption of alfalfa N credits to corn. For the future, Mr. Yost's goal is to become an agricultural scientist to continue agricultural research, transfer results to users, mentor students, and possibly teach courses.

Mr. Tom Bottoms is pursuing his Ph.D. in horticulture and agronomy at University of California in Davis, USA. His dissertation title is "Nitrogen management and remediation for environmental protection in Central Cost lettuce and strawberry production." This research is focused on monitoring current irrigation and fertilization practices in coastal lettuce and strawberry fields across a wide range of production environments to identify practices associated with significant N loss to the environment. Another component of this study is to document crop growth, N uptake, and N cycling patterns in both crops, and use this information as well the results from monitoring surveys to develop efficient crop management templates. Mr. Bottoms has an impressive resume of academic achievements and awards. In the future, Mr. Bottoms intends to serve Swaziland farmers for a couple of years and then work for the agricultural industry to meet grower needs in the US.

Mr. Ross Bender has just enrolled in a Ph.D. program in crop sciences at University of Illinois in Urbana-Champaign, USA. His M.Sc. thesis title was "Nutrient uptake and partitioning in high-yielding corn." The central objective of this study was to quantify nutrient uptake, removal, and partitioning in elite commercial germplasm grown under modern management practices. Other objectives were to evaluate the impact of hybrid background, transgenic insect projection, agronomic management, and location and/or weather differences on these nutrient use parameters. For the future, Mr. Bender wishes to complete his Ph.D. degree for use in fertilizer and/or seed industries and then farm on his family farm.

Mr. Ryan Van Roekel is working toward his Ph.D. in agronomy at University of Arkansas in Fayetteville, USA. His research is focused on achieving maximum yield of soybean. The primary goal is to work on a farm in southwest Missouri that holds the world's current soybean yield record, establish crop growth physiological characteristics of these crops, and provide a scientific basis for understanding how and if these yield levels are attainable. Close examination of these record-yielding management practices will provide avenues and opportunities to increase soybean yields worldwide through novel management of water, solar radiation, and nutrient resources. Mr. Van Roekel's future goal is to pursue a meaningful research career within the corn or soybean industry.

Ms. Yumiko Kanke is pursuing her Ph.D. degree in Agronomy and Statistics at Louisiana State University, Baton Rouge, USA. Her dissertation is titled “Establishment of remote sensing technology for optimum nitrogen management in rice and sugarcane.” Her research work focuses on using spatial and temporal variability through remote sensing techniques in modifying the current method of recommending N rates. She is also looking to identify spectral vegetation indices other than normalized difference vegetation index (NDVI) and parameters to characterize sugarcane biomass more effectively with respect to N health status. For the future, Ms. Kanke wants to specialize in sensing technologies and work to improve farm profits.

SOUTH AMERICA: Mr. Guillermo A. Divito is pursuing his Ph.D. in Agricultural Sciences at the Agronomy College of Balcarce, University of Mar del Plata, Argentina. His dissertation is titled: “Indices of sulfur sufficiency in soybean: physiology basis and fitness.” The main aims are to characterize the crop physiology bases that exert control on S demand—mainly those related to crop varieties and sowing date—and to propose and evaluate different plant analysis to determine S sufficiency indices. These indicators of crop S status address the need to improve S fertilizer recommendations, principally when soil test is not an entirely reliable tool yet. For the future, Mr. Divito intends to continue research and extension work on plant nutrition and soil fertility to help optimize fertilizer use.

Ms. María Florencia Varela is working towards her Ph.D. in Agricultural Sciences at the Agronomy College of the University of Buenos Aires, Argentina. Her dissertation is titled: “Impact of cover crops on phosphorus dynamics and soil physical properties in the Western Pampas of Argentina.” This study aims to evaluate nutrient recycling, mainly P, from residues of different cover crops under soybean-cover crop rotations. Her research provides information about both the release dynamics, as well as the chemical forms in which nutrients are released from crop residues, that are key topics to improve the knowledge about this nutrient source and their use efficiency in a sustainable way. For the future, Ms. Varela hopes to continue linked to soil science and soil fertility teaching and research.

Ms. Luciana Paula Di Salvo is completing requirements for her Ph.D. in Microbiology at the Agronomy College of the University of Buenos Aires. Her dissertation is titled: “Effect of inoculation with *Azospirillum* spp. on rhizosphere microbial populations and plant growth in wheat and maize on field conditions.” This study focuses on the inoculation with plant growth promotion rhizobacteria

(PGPR) and its interaction with fertilizer management (particularly N and P). This research will promote a better understanding of microbial processes related to nutrient dynamics, which is still necessary to achieve better results on strategic crops for human feed. For the future, Ms. Di Salvo's goal is to pursue a career as a scientist working on microbiology, especially on aspects related to crop nutrition.

Mr. Agustín Núñez is pursuing his M.Sc. degree on Agricultural Sciences at the Agronomy College of the University of the Republic, Montevideo, Uruguay. His thesis is titled: "Potassium dynamics in agricultural soils." His research work has focused on describing K dynamics in soils of Uruguay, where there are very few studies about this nutrient and its behavior under agricultural systems. To improve the state of knowledge about soil K in his region, he is evaluating plant growth parameters in ryegrass and changes in different soil K pools. He is attempting to analyze soil indices able to provide information about the interaction between soil K reserves and K availability for grain crops. Mr. Núñez wishes to specialize in soil fertility and precision agriculture and his main goal is to become an agricultural scientist.

Mr. Rodrigo Coqui da Silva is pursuing his Ph.D. in Soil and Plant Nutrition at "Luiz de Queiroz" College of Agriculture, University of São Paulo, Piracicaba, Brazil. His dissertation is titled "Agronomic effectiveness of phosphate fertilizers varying in water and citrate solubility as influenced by soil pH, P-fixing capacity, and available P." His main goals are to study the use and management of marginal-grade phosphate rock as an acidulated P fertilizer source in the most cost-effective way. Mr. Silva has been a visiting scholar at Kansas State University where he worked on highly developed techniques of evaluating both traditional and potential P fertilizer sources. After his Ph.D. Mr. Silva intends to be involved in research and education, helping to solve practical problems regarding fertilizer use, management, and technology.

SOUTH ASIA: Mr. Pardeep Kumar is pursuing his Ph.D. in Agronomy at Punjab Agricultural University in Ludhiana, India. The focus of his present research is on agronomic biofortification and enhancement of productivity of bread wheat varieties, where he is studying the impact of nutrient management on growth, productivity, and quality of common bread wheat varieties popular in the region, and also the agronomic biofortification of wheat grains by managing N, Zn, Fe, Mn, and Cu at critical phenological stages of wheat through soil and/ or foliar fertilization strategies. In the future, Mr. Ku-

mar wants to continue his research efforts in crop nutrition and do a postdoctoral fellowship in USA.

Ms. Ekta Joshi is working toward a doctorate degree in Agronomy at Indian Agricultural Research Institute in New Delhi, India. Her dissertation is titled “Nutrient omission studies in maize-wheat cropping system.” The main objectives of her study are to (a) determine indigenous nutrient supplying capacity of soil, (b) develop soil-test based recommendations for N, P, K, and Zn for different yield targets of wheat and maize, (c) determine the effect of omitted nutrients on soil quality and soil microbial population, (d) work out a site-specific nutrient management strategy for the maize-wheat system, (e) develop an apparent soil nutrient balance sheet, and (f) assess the direct, residual, and cumulative effect of omitted nutrients on productivity and profitability of maize and wheat crops and as maize-wheat system. Ms. Joshi hopes to become an agricultural scientist working on soil fertility and soil biology.

Ms. Angelene Mariaselvam is completing requirements for her master of philosophy degree at University of Peradeniya in Peradeniya, Sri Lanka. Her thesis title is “Improving a low productive Ultisol soil through fertility enhancement and carbon stocks improvement.” This study has two main objectives including the selection of a suitable organic amendment to improve soil carbon stock and developing a beneficial nutrient management practice specific to the area. The work is expected to pave the way for future research on specific nutrient management practices to improve marginal agricultural lands.

SOUTHEAST ASIA: Mr. Choon Cheak Sim is working toward his Ph.D. in Plant Nutrition and Soil Science at Universiti Putra Malaysia in Serdang, Malaysia. His research is focused on identifying K-efficient oil palm genotypes and studying the physiological mechanisms of K uptake and utilization efficiencies in oil palm genotypes. Information gained from the study will eventually lead to lower dependency on potash fertilizer for palm oil production. Mr. Sim’s career goal is to apply his plant nutrition and soil fertility knowledge for sustainable crop production and optimal use of resources.

Funding for the scholar award program is provided through support of IPNI member companies, primary producers of N, P, K, and other fertilizers. The recipients of the IPNI Scholar Award are selected by regional committees of IPNI scientific staff. The awards are presented directly to the students at a preferred location and no specific duties are required of them. Graduate students in the disciplines of soil and plant sciences including agronomy, horticulture, ecology, soil fertility, soil chemistry, crop physiology, and other areas related to plant nutrition are encouraged to apply. Graduate students at-

tending a degree-granting institution located in any country with an IPNI program region are eligible. More information is available from IPNI staff, from individual universities, or from the IPNI website: www.ipni.net/awards.

Common abbreviations and notes: N = nitrogen; P = phosphorus; K = potassium, Co = cobalt; Cu = copper; Fe = iron; Mn = manganese; Se = selenium; Zn = zinc; NH₄ = ammonium; CO₂ = carbon dioxide.

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Ref. # 12094

For photos of each IPNI scholar, please visit www.ipni.net/NEWS.

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