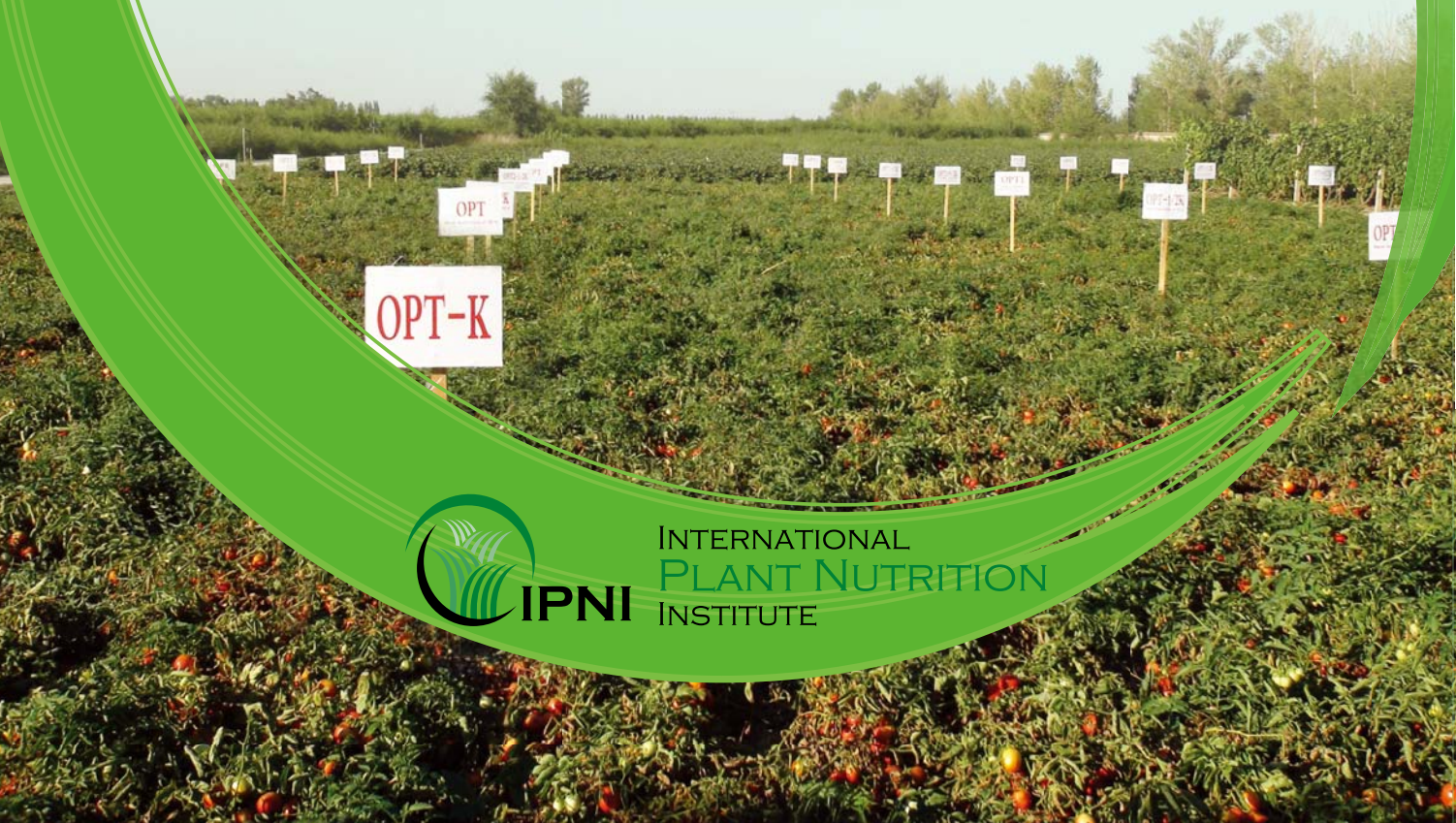


# IPNI CHINA PROGRAM NEWSLETTER 2013



**IPNI**

INTERNATIONAL  
PLANT NUTRITION  
INSTITUTE

# RESEARCH

## Nutrient Expert® Decision Support System for wheat and maize launched to public

Nutrient Expert® Decision Support System for wheat and maize was released to public at the Symposium on Nutrient Management in Modern Agriculture held in Xiamen on October 15, 2014.



Nutrient Expert (NE)® is an easy-to-use, interactive, and computer-based decision support tool that can rapidly provide nutrient recommendations for an individual farmer field in the presence or absence of soil testing data. NE for wheat and maize in China is developed by International Plant Nutrition Institute (IPNI) based on a large agronomic datasets from fertilizer experiments

conducted in the last 20 years by IPNI China Program. The analysis from datasets provides soil indigenous nutrient supplies, relationship between yield response and agronomic efficiency, and the optimal nutrient uptake simulated by the Quantitative Evaluation of the Fertility of Tropical Soils (QUEFTS) model.

Since 2009, Nutrient Expert field validation was conducted in wheat and maize production areas in China under support of IPNI, Ministry of Science and Technology, National Natural Science Foundation of China and Ministry of Agriculture. Results from using NE in China have revealed that many farmers are over using N and P fertilizer, a fact which has been described in the scientific literature. We also have found that K remains one of the limiting nutrients in optimizing food grain yields in many regions of China. By reducing N and P use on most farms, and increasing K use, we can see an improvement in yields, as well as nutrient use efficiency. In the end this means better profits for farmers, and less nutrients left in the environment. Now the software can be downloaded from IPNI webpage [software.ipni.net](http://software.ipni.net).

Since 2013, Nutrient Expert has been used in the region outside Northeast and North Central. Field validation conducted in Ningxia in 2013 indicated that fertilizer recommendation by NE produced an average of 2072 kg/ha (15.7%) more maize yield and 780 US\$/ha more net



income over farmer practice (FP). NE recommendation reduced N by mean of 160 kg N/ha, reduced P by mean of 63 kg P<sub>2</sub>O<sub>5</sub> and increased K by mean of 106.5 kg/ha, respectively, compared with FP, suggesting the reduction of environmental risks associated with NE recommendation. These results showed that NE can be used for fertilizer recommendation for maize in Northwest China.

### Research on 4R potassium management practices for crops

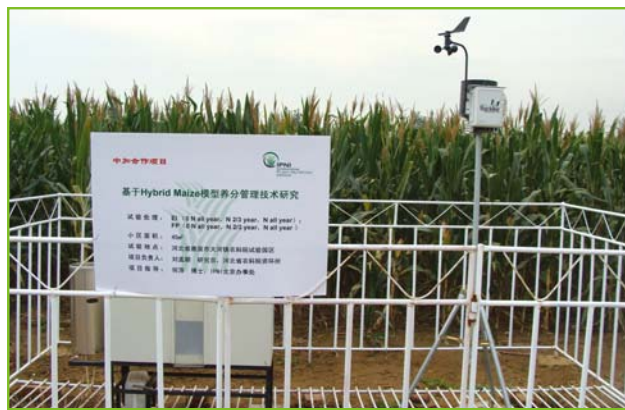
In 2013 field trials was conducted to study potassium source, rate and time of application on yield and product quality of four crops, i.e. apple (Liaoning, Shandong, Shaanxi), potato (Gansu and Inner Mongolia), cotton (Shandong, Henan, Hebei, Xinjiang) and processing tomato (Xinjiang). Results indicated that application of KCl at the right rate and time significantly increased yield and quality of products. Based on these results a ten-minute video on 4R potassium management practices for apple production has been made for better use of potash.



### Ecological Intensification nutrient management for maize in China

This project started from 2009, which was conducted at 15 field sites in main maize production areas all-over the world to study ecological intensification nutrient management. It aims to maximize grain yield and eliminate negative effects to environment as well through ecological intensification nutrient management combined with other best field management practices. The scientific concepts were highly proved that the importance of regional research to global nutrient management of IPNI.

The project includes two different cropping systems including spring maize mono-cropping system and summer maize and winter wheat rotation system in China. The results of field trials indicated that Ecological Intensification (EI) management with less nitrogen (N) fertilizer input (24% and 42% lower N input in spring maize and summer maize, respectively) ensured the grain yield and economic benefit, and significantly improved the N use efficiency and alleviated the risk of over-use N fertilizer to environment.



## Returning crop residue to soil alleviated potassium deficiency

In review of massive data generated from field experiments conducted in Sichuan province in the last decade, it revealed that returning crop residue to soil could not only alleviate potassium deficiency in crops but also decline potassium use efficiency. Soil test indicated that soils in Chengdu Plane had the lowest available K contents in the province, about 79% of the soil samples that contained available K below the critical value. However, the crops showed the lowest responses to added fertilizer K in the region. This seemed contradictory and somewhat puzzling people. After thoroughly study and analysis, it was found that the lack of crop responses to added fertilizer K was due to recycling crop residues in the region. Recycled crop residues invisibly added considerable amounts of K to the soil and in return significantly reduced crop responses to fertilizer K. Thus, crop residues are a valuable K source and can save mineral K when managed properly. Following photo shows rice



seedlings continuously receiving crop residues (left) grew slightly better than the rice seedlings treated with mineral K fertilizer without crop residue returned (right) at elongation stage.

## Combinations of control release urea (CRU) with regular urea (RU) increased N use efficiency of maize in Inner Mongolia

Lower fertilizer use efficiency and water body eutrophication caused by over-use and improper fertilizer application has been a severe problem in recent years in China. Since 2009, IPNI China Program has carried out field experiments about CRU on rice, maize, wheat, cotton, banana, and sugarcane. Compared to farmer fertilizer practices, CRU has significant effects on improvement of N use efficiency and saving N fertilizer by 25% without losses of grain yield. The results demonstrated a broad prospect of CRU in improvement of fertilizer use efficiency and labor cost.

In 2013, experiments of various combinations of CRU (30%, 45%, 60%, 75%) with the corresponding ratio of RU (70%, 55%, 40%, 25%) were conducted in drip irrigated maize under plastic mulch in Chifeng City and sprinkler irrigated maize in Erdos. Results indicated that in Chifeng and Erdos, compared with 100% RU, combination of 60%, 75% CRU with 40%, 25% RU produced 8.5%, 9.8% and 22.8%, 23.3% more grain yield, 7.0, 6.0 and 10.7, 10.5 kg/kg N more agronomic efficiency, 17.1, 16.1 and 34.5, 20.5 percentage point more N recovery efficiency. Compared with 100% RU at recommended N rate, combination of CRU and RU could reduce N rate by 20% without affecting grain yield of maize.



## Excessive potassium fertilizer intensifies fruit cracking in litchi

Potassium (K) is most important in producing high yield and quality of litchi fruit. However, overdose of fertilizer K can induce fruit cracking when application ratio of fertilizer N:K<sub>2</sub>O is far smaller than 1:1. High rates of K fertilizers can interfere with calcium metabolism, depress calcium concentration in fruit tissues and induce severe fruit cracking. Thus, good nutrient balance in litchi production is most crucial. Following photos show the litchi tree that received the lower N:K<sub>2</sub>O ratio had less cracked fruits (left) than the tree that received



## Field Demonstration and Fertilization Recommendation of Rapeseed

Supported by IPNI China program, the research project that titled “Research on the effect of rapeseed fertilization and nutrient management in China” and carried out by Huazhong Agricultural University has achieved good progress in recent years. The results of soil investigation showed that except soil pH was slightly decreased from 6.6 to 6.4, the soil OM, AN, AP, AK and AB contents in the main winter oilseed rape-planting regions of China were increased in last four decades. Crop stubble that annually remained in soil was increased with seed yield increase and at present it could reach 4,000 kg/ha for some top farmers. This is one of the main reasons of soil OM increased in these periods. Boron fertilization has become a common practice and it directly increased soil available Boron content.

Although compare with 1960s and 1980s, the soil fertility of oilseed rape fields in Yangtze River Valley at present was improved more or less, but we can often find relative soil N, P, K and B deficiency. This was mainly due to unbalanced fertilization and the critical levels for soil nutrient evaluation have increased, which were adjusted with intensive farming

system. The results from authors' field trial indicated that if we use the soil individual nutrient content when 90% of relative yield was gained as the critical value, then we can suggest that 160 mg/kg, 25 mg/kg, 135 mg/kg and 0.6 mg/kg could be used as soil available N, P, K and B critical values. With the new values, the relative soil N, P, K and B nutrient deficiency areas have reached 95%, 89%, 79% and 87% in Yangtze River valley respectively.

Better nutrient management is one of the key factors for increasing not only seed yields, but also seed quality. Authors' investigation indicated that about 55% of seed yield increase was contributed by balanced fertilization in recent years. The agronomy efficiency (AE) of N, P, K and B reached the peaks in recent years. Therefore, China's winter oilseed rape planting was benefited by soil fertility improvement and greatly increased the rational application rates of commercial fertilizers in last four decades.

## Soil K Test Methods and Evaluation

The project named “research on better soil K test methods and indicators for rice and wheat” that conducted by the Nanjing Soil Research Institute of CAS was going on well. As we know, the most common soil K fertility index used is soil available K, that measured using the 1 mol/L ammonium acetate (NH<sub>4</sub>OAc) as extractor. However, the NH<sub>4</sub>OAc method was only suitable for evaluating K availability in the soils with same type or similar K buffering capacities, but not in soils with variable K buffer capacities or in which the non-exchangeable K contribution to plant K uptake with larger proportion. So, developing a better method to test real K availability in various soils for creating better and precise diagnostic indices, estimating plant K uptake potential and making stable and uniform fertilization recommendation are substantial important for improving potash use efficiency.

The authors collected soil samples and compared NH<sub>4</sub>OAc potassium extraction method with other nine methods and studied the correlation values between different methods and the plant growth status. Finally, screened and optimized a method which possessed highly operability, better representation in soil potassium determination. The two methods were: ① using 2 mol/L of NaBPh<sub>4</sub> and extracting 30 min, and ② 0.5 mol/L of HNO<sub>3</sub> and extracting 30 min, to extract soil potassium content can better evaluate the effectiveness of soil potassium. Both methods showed a significant correlation on K uptake by rice and wheat plants with other indicators. Taking the operational of the methods, environmental effects and economic effects into account, 0.5 mol/L of HNO<sub>3</sub> was more suitable for the determination of soil available potassium content.

# ACADEMIC EXCHANGES

## IPNI Program Advisory Committee meeting

From April 2-5, IPNI PAC meeting was held in Manila, Philippines. About 30 IPNI Regional Program Directors and representatives from IPNI member companies participated this event. The objectives of this meeting were to communicate program updates of IPNI different regional programs, and get comments and suggestions from member companies so as to promote scientific use of plant nutrients to human families and fertilizer industry. Dr. Ping He, IPNI China Program Director, presented the meeting and made a presentation entitled “Program review - Challenges and Opportunities in China”. She introduced research/demonstration activities and outputs targeting to the issues in the different regions in China and the linkage to the global themes of IPNI. Some suggestions/comments from members and staff on future development related to the current challenges were discussed.

## IPNI annual Staff meeting

On June 7-16, IPNI annual Staff meeting was held in Malaysia. IPNI regional Directors and Deputy Directors participated this meeting. The objectives of this meeting were to update regional programs, working groups and discuss next year plan. IPNI China Program staff participated six working groups including Ecological Intensification for Global Maize, Soybean Nutrient Management, 4R Nutrient Management, Fertilizer BMPs and Nutrient Cycling, Nutrient and Environment, and Precision Nutrient Management.

## Symposium on Nutrient Management in Modern Agriculture was held in Xiamen

From Oct 14-16, the Symposium on Nutrient Management in Modern Agriculture was held in Xiamen, China. The symposium was organized jointly by IPNI, Institute of Agricultural Resources and Regional Planning (IARRP), Chinese Academy of Agricultural Sciences (CAAS), and Chinese Society of Plant Nutrition and Fertilizers (CSPNF). The symposium was jointly sponsored by Canpotex Limited, Sinofert Chemical Fertilizers, and Hainan Ganfeng Fertilizers. Dr. Daolong WANG, Director General, IARRP, CAAS, Dr. Dongxin FENG, Deputy Director General, Department of International Cooperation, CAAS, Dr. Boqi WENG, Vice President, Fujian Academy of Agricultural Science, Dr. Adrian M. Johnston, Vice President, IPNI, Dr. Shaohai YANG, Vice President of CSPNF, Professor & Dr. Mitruru OSAKI, Hokkaidu University, Japan, and more than 150 scientists of from different research institutions, universities, fertilizer industries were involved in this meeting. Dr. Ping He, IPNI China Program Director, and Director of Chemical Fertilizer Research Committee, CSPNF, chaired the opening session. Nutrient Expert® Decision Support System for maize and wheat were officially launched for public use, and IPNI Scholar Award was presented to the five recipients from different regions of China at the opening session. Thirty-three scientists gave presentations in the field of Nutrient Expert based fertilizer recommendation, nutrient cycling, chemical fertilizer research and application, nutrient physiology and nutrient management. All China Program staff made presentations during the meeting.



The symposium was successful to provide a good opportunity and platform that scientists from different research institutions could communicate and exchange scientific ideas together.

Before the symposium, the participants visited banana balanced fertilization experiments and demonstrations conducted by IPNI Southeast region (Soil and Fertilizer Institute, Fujian Academy of Agricultural Sciences) and Sinofert. Field visit indicated balanced fertilization with potassium improved grain yield, profitability and fruit quality.

### A Delegation from the Republic of Hungary Visited IPNI project in Ziyang, Sichuan Province, China

On November 26, 2013, a delegation of eight people from the Republic of Hungary visited the IPNI sponsored sloping land project in Ziyang, Sichuan Province, China. The delegation, led by Mr. Hajba Tamás, the Consul-General from Consulate General of the Republic of Hungary in Chongqing, had other seven people from the Hungarian Water Cluster. The Chairman of Hungarian Water Cluster, Mr. Róbert Forintos came along. Dr. Chaowen Lin, the IPNI project leader, Deputy Director of Soil and Fertilizer Institute, Sichuan Academy of Agricultural Sciences and his colleagues accompanied the delegation. He introduced the guests about the background, history and achievements of the project. “This project started in 1997 and was sponsored by Potash and Phosphorus Institute/ Potash and Phosphorus Institute of Canada (the former IPNI before 2007). The aim of the project was to combat soil and water losses from the sloping farmland using contour cash crop hedgerows and balanced fertilization. Great achievements were made in past years and highly recognized by the Ministry of Agriculture. The achievements were granted with the second award in Science and Technology Progress by the Sichuan Provincial Government in 2012. This technology was promoted to other parts of China with the similar problems and natural conditions in the past ten years, and IPNI therefore won its national-wide fame in China”, said Dr. Lin.



Mr. Hajba Tamás highly appraised the outstanding progress achieved through the cooperation between Soil and Fertilizer Institute, Sichuan Academy of Agricultural Sciences and the International Plant Nutrition Institute. He said, “This manner of cooperation can be borrowed by Hungarian organizations such as the Hungarian Water Cluster in future”.

### The 17<sup>th</sup> International Plant Nutrition Colloquium

During August 18-23, Dr. Ping He and Dr. Fang Chen participated IPNC held in Istanbul, Turkey, and made poster presentation on “Nutrient Requirements and Fertilizer Recommendation for Wheat and Maize in North China” and “Nutrient Management for Rapeseed in China” respectively. There were over 600 participants, 370 posts and 100 oral presentations in the colloquium.

### IFA China Sustainable Fertilizer Management Seminar

IFA China Sustainable Fertilizer Management Seminar was held in Beijing from Sept 16-17, 2013. This seminar was hosted by IFA, China Petroleum and Chemical Industry Federation, and organized by China BlueChemical Ltd, and Chemical Foreign Economic Cooperation Centre. Government leader including bo SU, Vice Minister of Industry and Information Technology, Caiwen HE, Deputy Director of Farming Management Division, Ministry of Agriculture, Wen LONG, Deputy Director of Agricultural Bureau, China Federation of Supply and Marketing Cooperatives, Jingyang WU, Economic and Trade Department, National Development and Reform Commission, Shengmin WANG, The Price Department, National Development and Reform Commission, Yan Wang, Customs Tarriff Department, Ministry of Finance, China. Charlotte Hebebrand, Director General, IFA, Patrik Heffer, Director, Agriculture Service, IFA, Hillel Magan, Director, IPI, FAN Mingxian, Director, International Zinc Association, Ray Dowbenko, Agronomist, Agium, Andrease Gransee, K+S. IPNI side, Dr. Adrian Johnston, Dr. Ping He were invited to make presentations at the meeting.

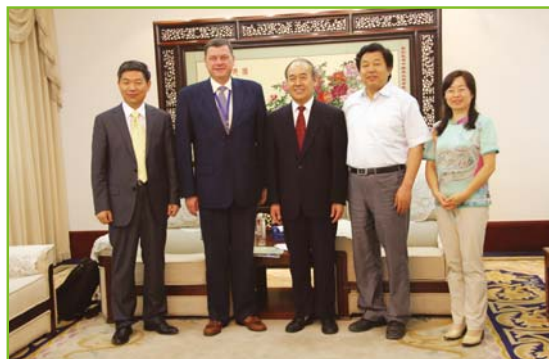
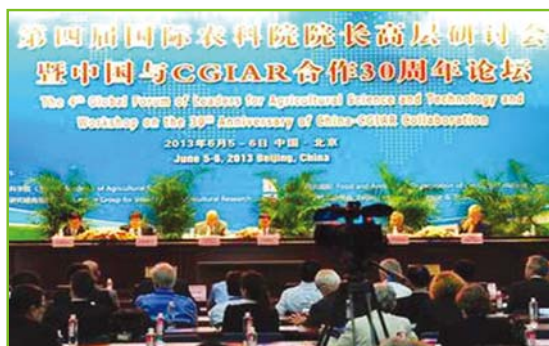




Dr. Adrian Johnston made a presentation on “Improving nutrient use efficiency with 4R nutrient stewardship” . Dr. Ping He's presentation is “Improving nutrient use efficiency and crop yield in China” . She mainly talked about evaluation of Nutrient Expert based fertilizer recommendation in improving nutrient use efficiency and crop yield. Some interests from the participants related to fertilizer recommendation with this new decision support tool. Dr. Adrian Johnston and Dr. Ping He were both asked to make some comments on improving nutrient use efficiency at the panel discussion.

### GLAST and 30<sup>th</sup> Anniversary of China-CGIAR collaboration

On June 6, 2013, the Global Forum of Leaders for Agricultural Science and Technology (GLAST) and the 30<sup>th</sup> anniversary of China-CGIAR collaboration was held in CAAS. Dr. Jiayang LI, MOA Vice Minister and CAAS President, presented the opening ceremony and gave an opening speech. Over 200 participants from council members of CGIAR, World Bank, FAO, CAAS and representatives from Agricultural Research Institutions presented this event. Dr. Adrian Johnston, Vice President of IPNI presented the meeting and visited Dr. Xu LIU, Vice President of CAAS during the meeting.



### CAAS Innovation Program

The importance of food safety and security in today's global economy cannot be ignored. China has recognized that advances in agricultural science and technology are essential in order to continue to feed its growing population. Chinese Academy of Agricultural Sciences (CAAS) is leading the effort to keep China ahead of the curve by growing itself into a top, world-class institution that can support the future needs of a developing nation. Recently, Science magazine released a booklet on CAAS's innovation program “The Chinese Academy of Agricultural Sciences: Envisioning an Innovative Future” . In this booklet, some of the program and institutes that CAAS oversees to gain some insight into how the future of agriculture in China might look have been collected. Dr. Ping He, Director, China Program, was interviewed by Science Magazine as one of the excellent research groups of CAAS. She gave a detailed account on the progress with efficient fertilization in China, which has been reported on page 12 of this book.



Efficient fertilization scientists at CAAS have made notable progress in reducing stress on the environment through the study of efficient fertilization techniques. “Without knowledge of optimal fertilization, farmers generally believe that more is better, leading to heavy runoff of fertilizer into the local environment,” says Dr. He, who is also a professor at the CAAS Institute of Agricultural Resources and Regional Planning. Her team aims to measure the nutrients naturally found in soil and the response of crops to the application of fertilizer. The understanding gained will lead to the establishment of tools for determining optimal nutrient application levels for intensive agricultural production systems, improving efficiency of nutrient use and reducing negative environmental effects due to over-application of fertilizer. “We work very closely with farmers and do a lot of educational work to promote the efficient use of fertilizer,” says Dr. He.



## Technology Introduction and Science Communication through 948 Project

On April 8-10, Dr. Ping He and Dr. Kaushik Majumdar, IPNI Indian Program Director, met with Dr. Mirasol Pamplino, Agronomist from IPNI Southeast Asia Program in IRRI to discuss Nutrient Expert for cereals based cropping systems. Based on the large dataset collected from 2000-2010 from IPNI China Program, QUEFTS model simulated reciprocal nutrient use efficiency, relationship between yield response and agronomic efficiency, and rice based cropping systems information was produced and would be incorporated into the coming NE rice based cropping systems. CAAS group, including Dr. Shicheng Zhao, Dr. Shaojun Qiu, and Mr. Xinpeng Xu, PhD student, working with Dr. Ping He also involved in discussion, as this is part of 948 Project from MOA.

## 2013 Yangling International Agri-Science Forum

2013 Yangling International Agri-Science Forum was held in Yangling on Nov 7-9, 2013. About 150 participants including scientists from Australia, USA, Canada, Japan, and China attended these events. The Forum focused on three themes, I. Germplasm Improvement and Sustainable Crop Production, II. Mechanical Equipment and Facility Agriculture, and III. Intensive Farming Management and Organization. Dr. Ping He was invited to make a presentation on nutrient management under theme I entitled "Nutrient Expert-A New Fertilizer Recommendation Approach Based on Yield Response and Agronomic Efficiency". Dr. He also made a presentation to the staff and the graduate students from College of Resources and Environment, Northwest Agriculture and Forestry University. Many questions came from the teachers and students on details of the nutrient management principles and future use for more users.

# TECHNOLOGY TRANSFER

IPNI cooperating network have arranged 70 field plot experiments, 101 demonstrations, 85 field investigations, 35 trainings for farmer and 9 harvesting days in 2013.



We published more than 100 scientific papers in national and international peer reviewed Journals as well as in Better Crops and Better Crops China. We also have produced Video promos for nutrient expert system of crops, apple, sugar cane and bananas to guide farmer's fertilization. Results showed that apply fertilizer rationally increase crop yield, improve quality and benefit farmers.

On May 4 of 2013, the IPNI China Program cooperator, Huazhong Agricultural University organized an activity titled "Field demonstration of BF technology for rapeseed high yield and quality" in Shayang county of Hubei province. Total 38 leaders and experts from Sinofert Hubei Branch, Huazhong Agricultural University, Hubei Agricultural Bureau, the Oil Crop Research Institute of CAAS, Wuhan Botanical Garden of CAS, technicians and farmers from local government and the village took part in the field activity. After the field activity, the participants recommend to use "4R" strategy for rapeseed production in Yangtze River valley. The technology mainly include: 1) application commercial fertilizers with a ratio of N: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O =1: 0.35: 0.45; 2) use 7.5-15 kg/ha of B fertilizer for rapeseed; 3) returning rice straw 2-3 t/ha; 4) keeping good condition of the ditch for irrigation and drainage.



The IPNI cooperative BF program in Fujian province made good progress in 2013. On June 20 of 2013, organized by our project cooperator—Soil and Fertilizer Institute of Fujian Academy of Agricultural Science, and Sinofert Fujian Branch,

a banana BF field demonstration activity was held in Nanjing county of Fujian province. Total 25 leaders and experts from local government, Fujian Academy of Agricultural Science and Sinofert Fujian Branch, and some banana planting farmers attended the activity.



This demonstration site also provided visiting fields for the “Symposium of nutrient management in modern agriculture” that held in October. The activity of farmers' training is also well organized. During July 27-29, Sinofert Fujian Branch and the Soil and Fertilizer Institute of Fujian AAS organized a training course for their staff. Prof. Zhang Mingqing of the Soil and Fertilizer Institute gave them two lectures and titled “Basic knowledge of plant nutrition and fertilizers” and “Pesticide use for the main crops in Fujian province” .

“Better Crop in China” have issued twice by IPNI China Program. The first issue was special for Nutrient expert system, which mainly summarized Methodology of Fertilizer Recommendation Based on Yield Response and Agronomic Efficiency for Seven provinces in the north of China. The Second issue was about research progress for crop balance fertilization.



## PLATFORM CONSTRUCTION

### CAAS and IPNI Sign MOU for a Joint Innovation Lab for Plant Nutrition

A Memorandum of Understanding (MOU) between Chinese Academy of Agricultural Sciences (CAAS) and IPNI was signed on Oct 18, 2013 for a Joint Innovation Lab for Plant Nutrition by Dr. Kongming WU, Vice President of CAAS and Dr. Adrian Johnston, Vice President, Asia and Africa Programs, in Beijing recently. As the only national agricultural research academy, CAAS has a mission to contribute to China's food security, safety and poverty alleviation through research, partnership, and capacity building and policy support. This mission aligns well with IPNI activities in China. IPNI Beijing Office has been attached to CAAS and IPNI China program is working closely with CAAS since 1990. The signing of MOU with CAAS under the platform of joint lab for plant nutrition innovation is also a part of CAAS Innovation Program initiated in June 2013. and will further strengthen collaboration in plant nutrition innovation research and

related technology transfer in China.

After signing the MOU with CAAS, Dr. Adrian Johnston visited the Institute of Agricultural Resources and Regional Planning (IARRP), CAAS, and signed the agreement with Dr. Daolong WANG, Director General, IARRP on how to implement the innovation research under the MOU with CAAS. IARRP, as the management institute of the joint lab, is responsible for daily management and providing the space for the joint lab.



## EDUCATION AND TRAINING

### IPNI Scholar Award

The International Plant Nutrition Scholar Awards are open to applicants who are graduate students attending a degree-granting institution located in any country with an IPNI program. Priority is given to the relevance of the proposed research in support of IPNI's mission. 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. Awards of US \$2,000 each will be awarded to winners. Review of applications will be conducted on a regional basis, including the following: North America, Latin America, Eastern Europe & Central Asia, China, South Asia, Southeast Asia, Australia/New Zealand, and Africa.

The winners of the 2013 Scholar Awards sponsored by IPNI have been selected. There are 5 graduate students from China received the IPNI Scholar Award. They are Yuzhen Lu, from Institute of Soil Science, Chinese Academy of Sciences; Yin Wang, from College of Resources and Environment, Huazhong Agricultural University; Xinpeng Xu, from Institute of Agricultural Resource and Regional Planning, Chinese Academy of Agricultural Sciences; Zuoping Zhao, from College of Natural Resources and Environment, Northwest A&F University. April 30<sup>th</sup> will be the deadline for the application of 2014 IPNI Scholar Award. Anyone who has interests, please go and check the IPNI website: [www.ipni.net](http://www.ipni.net).

### IPNI Science Award

The IPNI Science Award is to be presented each year to one agronomic scientist. Private or public sector agronomists, crop scientists, and soil scientists from all countries are eligible for nomination (no self-nomination please). The recipient receives a plaque and a monetary award of US\$5,000 (five-thousand US dollars). The award recognizes outstanding achievements in research, extension, or education which focus on efficient and effective management of plant nutrients and their positive interaction in fully integrated crop production that enhance yield potential. The purpose of the award is to acknowledge and promote distinguished contributions by scientists involved with ecological crop intensification where productivity is increased and the environment is improved.



Deadline to apply for the 2014 Science Award is September 30, 2014. To learn more about this award and find a nomination form, please visit IPNI website: [www.ipni.net/awards](http://www.ipni.net/awards)

In 2013, the IPNI Science Award was not presented as the minimum requirements for submissions, as stated in the award guidelines, were not met. Mr. Arthur E. Johnston (pictured), from Rothamsted Research, is the winner of the 2012 IPNI Science Award.





## IPNI Crop Nutrient Deficiency Photo Contest

The International Plant Nutrition Institute (IPNI) is continuing its sponsorship of its plant nutrient deficiency photo contest during 2014 to encourage field observation and increase understanding of crop nutrient deficiencies. Photos and supporting information can be submitted until December 11, 2014 (Thursday, 5pm EST) and winners will be announced in January of 2015. Winners will be notified and results will be posted at [www.ipni.net](http://www.ipni.net).

However, this year IPNI contest features some important changes: US\$300 First Prize and US\$200 Second Prize for Best Feature Crop Photo, US\$150 First

Prize Awards and US\$100 Second Prize Awards within each of the N, P, K and Other Nutrient categories. In addition, all winners will receive the most recent copy of our USB image collection. For details on the collection, please see <http://ipni.info/NUTRIENTIMAGECOLLECTION>. More information about past winners of these awards, plus latest updated news can be found at the IPNI website: [www.ipni.net/photocontest](http://www.ipni.net/photocontest).



1st Prize (USD 150): P-Deficient Lettuce of 2013 from Juan Hong, Wuhan Institute of Agricultural Sciences, Hubei, China.

The International Plant Nutrition Institute (IPNI) is a not-for-profit, science-based organization dedicated to the responsible management of plant nutrition for the benefit of the human family. IPNI began operating in January of 2007 and now has active programs in Africa, Australia/New Zealand, Brazil, China, Eastern Europe/Central Asia and Middle East, Latin America-Southern Cone, Mexico and Central America, Northern Latin America, North America (Canada and U.S.A.), South Asia, and Southeast Asia.

As a global organization, IPNI has initiatives addressing the world's growing need for food, fuel,

fiber, and feed. There is widespread concern for issues such as food security and the relationship of crop production to the environment and ecosystems. IPNI programs are achieving positive results in many areas. The program coordinators and IPNI regional directors are Ph.D. scientists. Through cooperation and partnering with respected institutions around the world, IPNI adds its strengths to agronomic research, education, demonstrations, training, and other endeavors. Best management practices for nutrient stewardship encourage the concept of applying the right product (source), at the right rate, at the right time, and in the right place.

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