IPNI Annual Program Report: Making A Difference for Science, People, and Stakeholders

hen IPNI was first established in 2007, environmental challenges associated with fertilizer use were the primary issues of concern for society and the fertilizer industry. We spent a lot of time and energy debunking false information and alleviating public concerns about nutrient use. Soon after our launch the global food crisis started and by 2008 fertilizers were being viewed in a new light ... as a solution to the problem, rather than a problem. It was under that atmosphere that IPNI scientists introduced the idea of 4Rs; that applying the right nutrient source, at the right rate, right time, and in the right place was the ideal way to scientifically address the need to produce more food and feed while protecting our environment. The foundation of 4Rs was science-based, site-specific best practices intended to accomplish stake holder goals of food security and environmental sustainability.

4Rs have and are making a difference in how nutrients are managed around the world and how regulators perceive nutrient management. What started in North America has spread to a global movement that has taken on a life of its own. 4Rs are being adopted in Australia, China, India, Pakistan, South East Asia, the Middle East, Sub-Saharan Africa, Russia, North and South America. In the developing world, 4Rs provide much needed nutrient management tools to increase basic food and feed production, while in the developed world 4Rs provide an environmental



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tool to help ensure nutrients are being used efficiently and effectively.

One of the difference-making tools that IPNI has developed is Nutrient Expert[®]. This decision support software is changing how fertilizer recommendations are made in the developing world while integrating the prin-





ciples of 4R Nutrient Stewardship. Nutrient Expert makes site-specific fertilizer recommendations based on target yields using locally available fertilizers, with or without soil test results. It accounts for straw management, manure use, previous crops, tillage, soil type, residual nutrients, and climatic conditions. In partnership with governments, extension services, and research organizations, Nutrient Expert is being scaled up in China, South Asia, Southeast Asia, North Africa, and Sub-Saharan Africa.

IPNI's interaction with the International Nitrogen Initiative (INI) has made a great impact on the direction and outcomes of this group of influential scientists. Their stated objectives are "to optimize nitrogen's beneficial role in sustainable food production and minimize nitrogen's negative effects on human health and the environment resulting from food and energy production." Working together with The Fertilizer Institute, we became involved with INI in 2001 at the 2nd International N Conference held in the USA and have been working with them ever since. We have been represented on their Advisory Committee for more than 10 years and assisted in the organization of each of the subsequent International N Conferences held in China (2004), Brazil (2007), India (2010), Uganda (2013), and most recently in Australia (2016). Our participation has resulted in each conference reporting on and recognizing the beneficial role of N in food production. We have collaborated with the International Fertilizer Association in review of the "Declaration" outcomes of these conferences to ensure that fertilizers are accurately portrayed, which is critical to how N is perceived by the international community including the United Nations and Organization for Economic Co-operation and Development. Our Phosphorus Program, initiated in July 2015, is beginning to assume a similar role with the emerging Sustainable Phosphorus initiatives.

Our work with Field to Market: The Alliance for Sustainable Agriculture has been instrumental in moving their Fieldprint®Calculator to consider all 4Rs, instead of just application rate, as it analyzes and benchmarks a farmer's sustainability performance against regional, state and national standards. Similarly, we have played important roles integrating 4R principles into certification programs, including the Lake Erie Watershed 4R Certification Program, and the American Society of Agronomy's Certified Crop Adviser 4R Nutrient Management Specialty.

IPNI's regional programs directly impact fertilizer markets-protecting nutrient use in mature markets and increasing fertilizer use in developing markets. We accomplish this through our research and demonstration programs and educational activities. Our efforts have led to improved fertilizer recommendations from the U.S. Corn Belt to the Gangetic Plains in India to the Cerrado in Brazil. Our work has improved livelihoods for smallholder subsistence farms in sub-Saharan Africa and the large agricultural holdings in Russia. IPNI scientists are respected by research and academic colleagues, government officials, extension workers, and NGOs, and are often sought after to serve in leadership roles, partner with in research projects, co-author papers, participate in advisory committees, to speak at meetings and a host of other activities which make a difference.

Our roots in the realities of science and agriculture enable us to apply the results of research to transform crop production. We appreciate the great support of our members and their long-term vision in striving to help feed the world. **BC**

Dr. Terry Roberts, IPNI President