INTERNATIONAL PLANT NUTRITION INSTITUTE

PO Box 500 GPO, 10670 Penang, Malaysia
Phone: +60-4-6202284
Fax: +60-4-6264380
Email: seap@ipni.net
URL: http://seap.ipni.net

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NEWSFLASH : *Nutrient Expert*® to aid nutrient management decisions in cereal crops

March 7, 2013. Penang, Malaysia – The *Nutrient Expert*® is a simple, computer-based decision support tool for cereal crop intensification. Based on the principles of site-specific nutrient management (SSNM), the *Nutrient Expert*® (NE) was developed to assist crop advisors and farmers in the formulation of fertilizer recommendations tailored to a specific field or growing environment.

SSNM which was originally developed for rice has been adapted for maize and wheat successfully in India, Philippines and Vietnam, with increased crop yield, economic returns and fertilizer-use efficiency compared to farmers' fertilizer practice.[1] However, implementation beyond farm trials has been slow due to the notion that SSNM is complex and hard to understand. NE cuts through the complexities of SSNM by using a simplified, systematic approach to capture important farming data, making it attractive to non-technically inclined crop advisors in Asia.

By extracting information from user experience, farmers' knowledge of the local region and farmers' practices, NE is able to develop strategies to manage N, P and K fertilizer use in crops. Using decision rules from on-farm trials together with the local farmer knowledge, NE estimates attainable yield and the yield response to each nutrient, and provides location-specific fertilizer recommendations. The tool specifies the amount of N-P-K fertilizers to be applied and the timing of application, including split applications. By balancing out the application of N, P and K separately, with an increase or decrease in the nutrient application, yields are optimized. Even with increased fertilizer costs as noted in field evaluation studies of NE maize, profits increased six times the additional investment in fertilizer. [2]

To date, NE maize and NE wheat have each been field evaluated in over 400 locations across Asia, with results showing the ability of NE to increase yield, profit, and fertilizer use efficiency over existing fertilizer management practices.

For both maize and wheat, yield increase with NE could be attributed to the balanced application of nutrients based on location-specific crop requirements that take into account yield potential, soil fertility, and farmer's economic status. Where farmers' yields are still below the attainable yield level such as in developing countries, NE fertilizer recommendation is effective in closing the yield gap by eliminating the nutrient-related constraints. Where farmers' yields are already at the attainable yield level such as in China, NE is contributing in reducing nutrient losses to the environment by recommending optimum nutrient rates, which increase fertilizer use efficiency.

Designed to work across a range of climates, soil types and cropping systems, NE presents several opportunities for scaling out. Fertilizer companies, seed producers and farmers' field schools can use the tool to deliver their products, while providing strategic fertilizer information to farmers so that they are able to obtain optimal yields.

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About IPNI

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 people. Through cooperation and partnerships with respected institutions around the world, IPNI adds its strength to agronomic research, education, demonstrations, training, and other endeavors. Best management practices for nutrient stewardship encourage the concept of 4Rs - applying the right nutrient source, at the right rate, at the right time, and in the right place. To learn more about IPNI, please visit: www.ipni.net

Contact

Dr. Thomas Oberthür, IPNI Director of Southeast Asia Program
Email: toberthur@ipni.net

[1] Pampolino et al., 2007. Environmental impact and economic benefits of site-specific nutrient management in irrigated rice systems. Agric. Syst. 93, 1-24

[2] Pampolino MF, Witt C, Pasuquin JM, Johnston A, Fisher MJ. 2012. Development approach and evaluation of the Nutrient Expert software for cereal crops. Computers and Electronics in Agriculture 88: 103-110