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NEWSFLASH : Improving Maize Crop Yield and Profitability in Southeast Asia with Site-Specific Nutrient Management

March 15, 2014. Penang, Malaysia – Site-specific nutrient management (SSNM), based on 4R Nutrient Stewardship, shows huge potential in improving crop yield and profitability of maize production systems in Southeast Asia.

With demands for livestock feed increasing, maize is rapidly becoming a major industrial commodity. Current production totals 250 million tons[1], which is insufficient to match the growing demand - projected to rise to 291 million tons by 2020[2]. Rather than area expansion which may impact the environment negatively, sustainable crop intensification to increase yield is a suitable alternative.

By using a combined approach of simulation modelling and on-farm research, the International Plant Nutrition Institute - Southeast Asia Program (IPNI SEAP) together with partners was able to quantify the gaps between potential maize yield and the actual yield produced, evaluate the performance of SSNM in closing these gaps and gauge its profitability in various production and fertilizer scenarios.

Between 2004 and 2008, field trials were conducted in at least 65 sites in 13 major maize-producing regions in Indonesia, Vietnam and the Philippines in order to develop and evaluate SSNM for hybrid maize. By adjusting fertilizer N, P and K to optimal application rates in each site, maize yield was increased on average by 13% compared to farmers' practice.

The 4R-based SSNM approach of balanced NPK fertilization and timely application of nutrients according to crop growth stages resulted in more extensive plant growth and increased nutrient use efficiency. In the case of N, with the average application rate decreasing by 10%, the N use efficiency increased by 42%.

With SSNM improving crop yield, profitability increased by USD 167 per ha per crop, i.e., 15% of the total average net returns. Using simulations, the study also revealed that greater returns were more likely with SSNM in highly favourable rainfed environments compared to irrigated and less favourable rainfed areas which did well under farmers' fertilizer practice. In highly favourable rainfed areas, maize crops grown using SSNM reduced existing yield gaps through improved yield and nutrient use efficiency, thereby improving profitability.

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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

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[1]FAOSTAT, 2013 FAO Statistics Division (http://faostat.fao.org/)
[2]IFPRI, 2001 Global Food Projections to 2020: Emerging Trends and Alternative Futures. International Food Policy Research Institute (IFPRI), Washington DC, USA.