



NEWSFLASH : The potential of 4R nutrient management to increase yields in the grey degraded lands of North Vietnam

June 27, 2013. Penang, Malaysia – Approximately 3 million hectares of land in Vietnam are characterized as grey degraded soils, that is, low in soil fertility due to the parent material and nutrient losses from leaching and intensive cropping. However, this has not deterred farmers in the Red River Delta in North Vietnam from planting a rotation of two crops of rice and one of maize each calendar year. Despite poor soil fertility, these farms have been producing 18 t/ha of grain yield annually with excellent crop management including adequate water and fertilizer, and significant inputs of organic manure.

Past research in this region has shown that rice and maize yield responses to fertilizer N, P, and K application were limited by imbalances of soil calcium, potassium, and magnesium. To assess the magnitude and spatial distribution of these soil nutrient imbalances, a soil survey of more than 100,000 hectares of grey degraded soils in the Red River Delta was conducted by the Southeast Asia Program of the International Plant Nutrition Institute (IPNI) and the International Potash Institute (IPI), in collaboration with the Soils and Fertilizers Research Institute (SFRI) in Hanoi, with support from the International Fertilizer Industry Association (IFA).

Results revealed multiple nutrient stresses and soil constraints in much of the surveyed area. Soils were generally acidic (pH <5.2), very low in clay, cation-exchange capacity, and exchangeable potassium and magnesium, but with moderate to high phosphorus levels. Maps of soil parameters related to soil nutrient status showed high spatial variability. Information from the soil survey was used to improve existing site-specific nutrient management (SSNM) recommendations for rice and maize in the Red River Delta. These included site-specific adjustments to N-P-K management strategies, as well as recommendations for the application of lime and magnesium, as needed, to correct nutrient imbalances. Once pH and magnesium deficiency were corrected simultaneously, higher potassium rates were required to further boost crop yields.

Site-specific approaches in the management of grey degraded soils in the Red River Delta are guided by the principles of 4R nutrient stewardship, i.e. apply the right source of nutrients, at the right rate, at the right time, and in the right place. Developing SSNM-based fertilizer recommendations for maize is now made easier using the *Nutrient Expert*[®] software. *Nutrient Expert*[®] is a simple and rapid, decision support tool developed by IPNI to assist crop advisors with making location-specific fertilizer recommendations so that farmers can increase crop yield and reap higher profits. *Nutrient Expert*[®] for maize is available in Vietnamese.

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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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