

Evaluation of leaf total nitrogen content for nitrogen management in a Malaysian paddy field by using soil plant analysis development chlorophyll meter

Abstract

Problem statement: Laboratory plant testing is usually time-consuming and high-costing. Hence, plant nutrient variability must be measured rapidly and the information made known to the farmers before the new season starts. Site-specific crop management, well-established in some developed countries, is now being considered in other places such as Malaysia. **Approach:** The application of site-specific management principles and techniques to diverse crops and small-scale farming systems in Malaysia will present new challenges. Describing within-field variability in typical Malaysian production settings is a fundamental first step toward determining the size of management zones and the inter-relationships between limiting factors, for establishment of site-specific management strategies. **Results:** Measurements of rice SPAD readings and nitrogen content were obtained in a Malaysian rice paddy field. SPAD reading data was manually collected on 80DAT and measured using a Minolta SPAD 502. Leaf samples were collected at 60 points at the same time to compare results from sampling with SPAD reading values. Samples nitrogen content was analyzed in a laboratory. Analysis of variance, variogram and kriging were conducted to determine the variability of the measured parameters and also their relationship. SPAD reading and nitrogen content maps were created on the interpretation of the data was investigated. **Conclusion/Recommendations:** Finally the research indicated that SPAD readings are closely related to leaf N content which means the potential for technology of precision farming to understand and control variation in Malaysian production fields and also SPAD chlorophyll meter ability to monitor the N status of rice and recommend the amount of N fertilization. Additional research is needed to confirm the results with data from other fields and crops.

Keyword: Nitrogen content, Precision farming, Site-specific management, Variability