

SOIL TEST KIT

Hand-carried kit that permits quick tests for soil pH as well as the key plant nutrients in soils: Nitrogen (nitrate and ammonium), Phosphorus and Potassium. The results can be read in 20 minutes in the field. One kit can analyze 50 soil samples resulting in 250 individual analyses.

Site-specific Nutrient Mangement. (Red info under link)

Modern agriculture must meet the multiple challenges of increased productivity to meet food needs of larger populations, profits to ensure food and welfare security and be more environmentally healthy. One way to meet such challenges are to apply concepts of site specific nutrient management. It has been well recognized that the application of adequate quantities of plant nutrients is a key to increasing maize productivity, economic return, and to reduce negative environment impact.

Site-specific Nutrient Management increases crop productivity, economic return and reduces negative environmental impacts. At present, there are only general recommendations for maize fertilization, and application rates are often dictated by the fertilizer grades available in the market rather than by crop or soil needs. In addition, most existing fertilizer applicators were not adjustable. These practices led to the imbalanced, inefficient and environmentally unhealthy use of fertilizers, which is not only an economic loss to the farmers, but also a concern to the Government as most of the fertilizer materials are imported. Thai farmers apply fertilizer according to availability in the market and learning from successful neighbors. The philosophy behind precision agriculture or site specific nutrient management is that production inputs (seed, fertilizer, chemicals, etc.) should be precisely managed for the most economic production. In USA, Precision Agriculture often used the GIS and GPS as the devices to manage the farms in small areas within fields, which requires a high technology. For site-specific fertilizer recommendations, soil testing is an important tool.

Soil testing provides key information for Site-Specific Nutrient Management. Soil testing as a tool for fertilizer recommendation is not widely practiced in the Tropics due to the limited number of soil testing laboratories and lack of research on fertilizer recommendations.

Furthermore, soil testing is time consuming, and costly for poor farmers. To help the farmers test the soil samples quickly, identify their soils and apply the right fertilizer recommendation are crucial steps for site specific nutrient management in Thailand. Moreover, farmers do not have ready access to information on soil and fertilizer, they do not



Figure 1. Mr. Nivong Sipaseuth tests soil pH using the Thai soil test kit. Notice the extreme zinc deficiency symptoms on the maize plant lower right.



Figure 2. Training on using the Thai soilteskiMozambique, Africa.

know how to calculate the costs and they can be misinformed and use the inappropriate organic and inorganic fertilizers. Therefore, there is an urgent need to adapt site-specific nutrient recommendations (primarily N, P, and K), to the farmer's production goals and resources, which could then be transferred to the farmers by extension officers or farmer leaders.

Soil testing and soil identification lead to improved fertilizer recommendations, economic benefit, and empowers farmers.

The idea behind the soil test kit development originated in a **chemical fertilizer test kit** invented 30 years ago that was very effective in removing fake fertilizers from Thailand fertilizer market. The kit was also used by researchers to identify unknown fertilizers and introduced the idea of empowering farmers and agents with scientific information. Site Specific Nutrient Management includes soil testing by **soil test kit, soil series identification** and fertilizer recommendations developed by decision-aids software. These steps have been field-tested and used by farmers in Thailand.



Figure 3. Soil test kit training -- Angola

Keeping /Age: Keep at room temperature /1 year

Precaution: Test solution in large glass bottle and test solution in small plastic bottle can corrode to skin In case of contact with the water and soap

Keep test kit out of children reach.

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