

**Site-specific nutrient management (SSNM)** is a plant-based approach that provides principles that can be used everywhere. SSNM also gives guidelines for effective N, P, and K management so that farmers give their crop the right amount of essential nutrients.

**SSNM** provides an approach for —feeding crops with nutrients as and when needed. This approach advocates:

- » optimal use of existing indigenous nutrient sources, including crop residues and manures, and
- » timely application of fertilizers at optimal rates to meet the deficit between the nutrient needs of a high-yielding crop and the indigenous nutrient supply

### ESTABLISH AN ATTAINABLE YIELD LEVEL

**1** Yields are location and season specific —depending upon climate, variety, and crop management. The attainable yield is estimated from farmers' fields where good crop management was practiced and nutrients were not limiting yield.

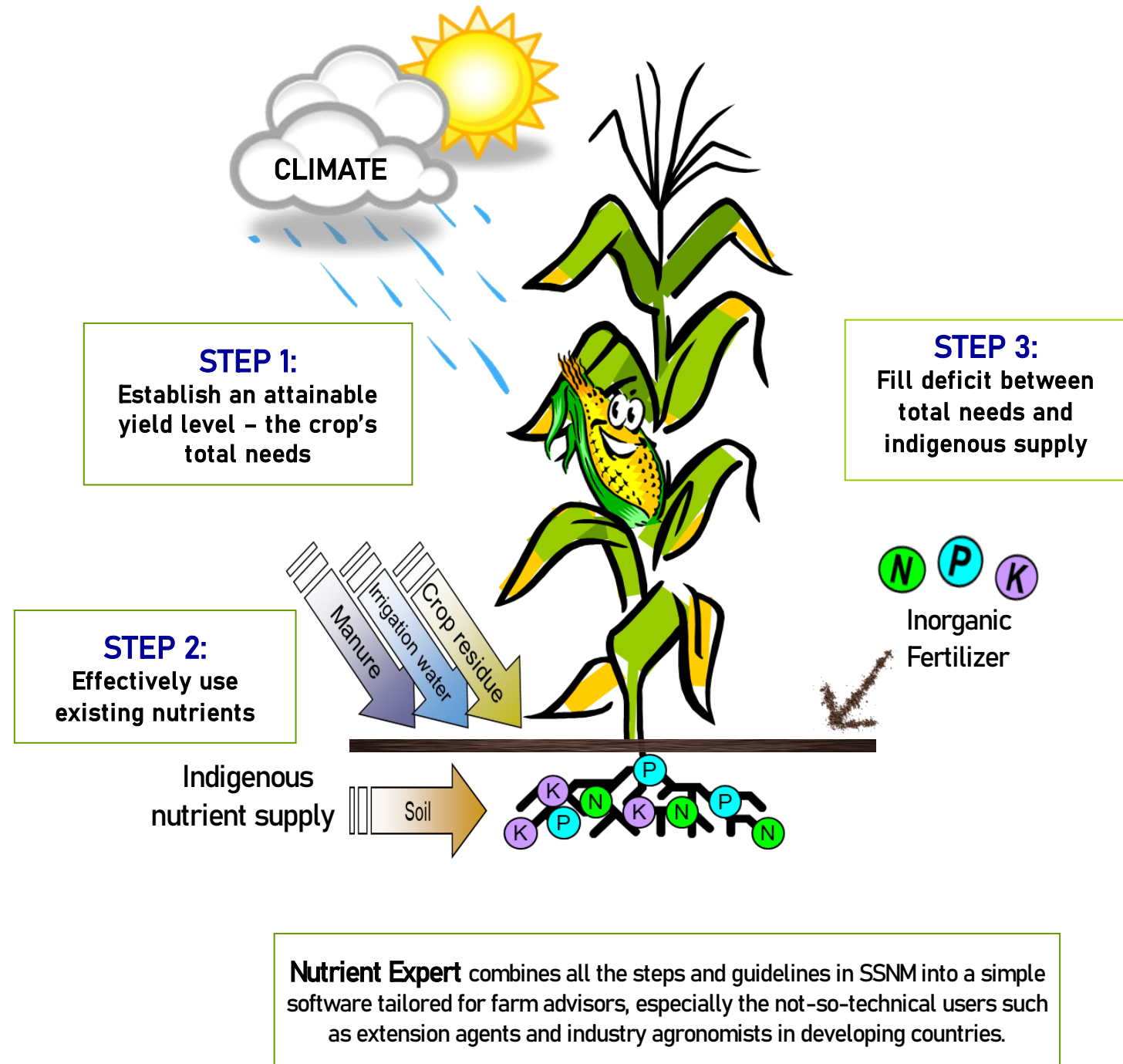
### EFFECTIVELY USE EXISTING NUTRIENTS

**2** The uptake of a nutrient from indigenous sources can be estimated from the nutrient-limited yield, which is the grain yield for a crop not fertilized with the nutrient of interest but fertilized with other nutrients to ensure they do not limit yield.

### FILL THE DEFICIT BETWEEN CROP NEEDS AND INDIGENOUS SUPPLY

**3** The quantity of required fertilizer is determined by the deficit between the crop's total needs for nutrients as determined by the attainable yield level and the supply of these nutrients from indigenous sources as determined by the nutrient-limited yield.

## SSNM APPROACH



**NUTRIENT EXPERT** is a new computer-based decision support tool developed to assist local experts to quickly formulate fertilizer guidelines for tropical hybrid maize based on the principles of site-specific nutrient management (SSNM)

The guidelines provided by this software are consistent with the scientific principles and was guided by the following goals of SSNM:

- » Utilize indigenous nutrient sources available on-farm
- » Minimize depletion of soil fertility
- » Avoid the luxury uptake of nutrients by the crop
- » Achieve high profitability in the short and medium term
- » Apply adequate amounts of fertilizer N, P, K, and other nutrients to minimize nutrient-related constraints and achieve high yield

This software only requires information that can be easily provided by a farmer or local expert. This set of information include:

Current yield and nutrient management practice
Farmer's current planting density
Characteristics of the growing environment or estimate of the attainable yield (if known)
Soil fertility indicators (e.g. soil texture and color, historical use of organic inputs) or estimates of yield
Crop residue management, use of organic inputs, and nutrient carryover from previous crop are used to adjust fertilizer P and K requirements as merited

### What can Nutrient Expert do?

Rapidly provide field-specific fertilizer recommendations consistent with the 4R nutrient stewardship.

Generate recommendations using readily- available data and information, with or without soil testing results.

Provide suggestions for risk management such as in-season drought.

Provide recommendations based on the attainable yield for specific conditions; with options for adjusting recommendations depending on the farmer's budget for fertilizer and desired income.

Provide a profit analysis of the recommended practice to help farmers make informed decisions.

Provide recommendations using locally- available fertilizers.

The software also presents a simple profit analysis comparing costs and benefits between the farmer's current practice and the recommended alternative improved practice.

Free download from  
<http://software.ipni.net/article/nutrient-expert>

**SOURCE:**  
<http://www.knowledgebank.irri.org>  
 C. Witt, J.M. Pasuquin, M.F. Pampolino, R.J. Buresh, and A. Dobermann. 2009. A manual for the development and participatory evaluation of site-specific nutrient management for maize in tropical, favorable environments. International



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# SITE-SPECIFIC NUTRIENT MANAGEMENT

