

# Making the most of the SIX EASY STEPS nutrient management program

*The SIX EASY STEPS program is recognised as the basis for best practice nutrient management in the Australian sugar industry. Ongoing learning and continuous improvement are fundamental to the program. By **Bernard Schroeder**, University of Southern Queensland and **Danielle Skocaj**, SRA*

When used as intended, the SIX EASY STEPS allow nutrient management to be improved as we learn more about better ways of managing nutrients. We do this through testing, validation, and implementation. This leads to better insights, identification of opportunities and also helps the industry understand where we need further skills and knowledge. The program is based on sound information and logical reasoning.

## Better nutrient management

There has been much progress over the last few years in getting growers and their advisors familiar with, and using, the SIX EASY STEPS framework. This is especially the case with STEP 3 (Soil testing regularly) and STEP 4 (Adopting soil-specific nutrient management guidelines).

Step 5 (Checking the adequacy of nutrient inputs) and Step 6 (Modifying nutrient inputs when and where necessary) particularly relate to the ongoing learning aspects of the SIX EASY STEPS program. These two steps aim to develop on-farm expertise for further refinement of nutrient management options for specific circumstances. An example is the development and use of on-farm nutrient management plans that include multi-seasonal assessments of nutrient inputs, yield data, and the economic and environmental implications.

The SIX EASY STEPS framework	
Step	Description
1	Knowing and understanding our soils.
2	Understanding and managing nutrient processes and losses.
3	Soil testing regularly
4	Adopting soil-specific nutrient management guidelines
5	Checking on the adequacy of nutrient inputs
6	Keeping good records to interpret trends and modify nutrient inputs when/where necessary



### Nutrient management planning

The SIX EASY STEPS program has always included nutrient management planning. It is aimed at sustainable sugarcane production, which is dependent on adequate and balanced nutrient inputs. Importantly, it assists growers to optimise yields and profit, maintain or improve on-site soil fertility, and minimise off-site impacts.

On-farm nutrient management plans need to consider which nutrient inputs and practices are best for a particular block of cane. Sometimes this can be done by developing the best options for a block of cane as a whole, but if in-field variations exist, then sub-block management may be needed.

Once nutrient requirements have been established, whole-of-farm nutrient management plans may involve some rationalisation to ensure the choice of fertilisers, rates and practices are practical and achievable.

### Position in the landscape to guide nutrient management

Knowledge of position of soils in the landscape provides a very useful basis for managing nutrients more effectively. It enables your management to be tailored to your circumstances by relating chemical properties and physical characteristics (especially texture) to other soil attributes such as drainage and nutrient loss.

Farm-specific knowledge forms the basis for STEP 1 (Knowing and understanding our soils) and STEP 2 (Understanding and managing nutrient processes and losses) of SIX EASY STEPS. However the full SIX EASY STEPS process will ensure additional knowledge and skills are acquired and used for improving and further refining nutrient management for individual blocks or soils. This process is illustrated using an example from Tully (see below).

Soils around Tully can be broadly grouped as igneous or alluvial. The soil mapping undertaken by CSIRO in the 1980s classified soils into soil types that are generally identified by local place names. People become familiar with these names as they use the system and understand the concepts and properties associated with each of the identified soil types.

For instance, Thorpe series soils have dark grey sandy loam topsoils with yellowish brown sandy clay loam subsoils. They are found at the base of the granitic mountains in slightly upland positions. They contain a predominance of coarse sand and gravel, have relatively low CECs, and low organic carbon contents. They are permeable and reasonably well-drained and have low water-holding capacity. Ratoon cane grown on these soils requires about 140 kg nitrogen (N)/ha. Leaching of N is the biggest risk, but runoff can also occur with excessive rainfall. There is little opportunity to reduce N application rates when conventional (non-EEF) fertiliser products are applied to these soils. This is primarily due to the inherent loss pathways and the overall low fertility of these soils.

In contrast, Hewitt series soils are derived from alluvium. They have dark brown to black light clay topsoils with mottled grey and yellow subsoils. They are found in bottomland positions and depressions, and often become saturated in the wet season. The high organic carbon content of the topsoils enables relatively large amounts of potentially mineralisable N. Ratoon cane grown on these soils therefore requires about 100 kg N/ha. Denitrification is the largest potential loss pathway due to the frequent water-logging. Cane grown on these soils is generally unresponsive to applied N during extremely wet seasons. If this type of climatic condition is expected, then further reductions in N rates could possibly be considered.

### Take time to understand the soils on your farm

Knowing and understanding your soils and planning your nutrient requirements will give you the right tools to be able to make logical decisions about your fertiliser choices. The associated improvements and learnings from the SIX EASY STEPS process will assist with managing risk and spending your fertiliser budget sensibly.

### For more information

#### Gavin Rodman

grodman@sugarresearch.com.au  
0476 807 355

### The SIX EASY STEPS team

Bernard Schroeder (University of Southern Queensland)  
Barry Salter (SRA, Mackay)  
Danielle Skocaj (SRA, Tully)  
David Calcino (SRA, Meringa)  
John Panitz (SRA, Bundaberg)  
Glen Park (SRA, Ingham)  
Zofia Ostatek-Boczynski (SRA, Indooroopilly)  
Eric Kok (SRA, Mackay)  
Andrew Wood (Consultant, Millaa Millaa)  
Alan Hurney (Consultant, Edmonton)  
Gavin Rodman (SRA, Meringa)  
Nick Hill (SRA, Mackay)

