



## IMPROVED NUTRIENT MANAGEMENT

Australian tomato growers utilize soil and plant tissue tests to reduce their fertilizer inputs, some growers realising 30% savings already.



Glenn Rorato, tomato farmer for Unilever Australasia says that increased soil testing and information from the Sustainable Agriculture Project (SAP) has resulted in a 30% reduction in fertilizer inputs so far.



Work in partnership with:  
Outsourced Environmental,  
Australia;  
[www.outsourcedenvironmental.com.au](http://www.outsourcedenvironmental.com.au) or email:  
[enquiries@outsourcedenvironmental.com.au](mailto:enquiries@outsourcedenvironmental.com.au)

More information:  
Sikke Meerman  
UR Vlaardingen  
The Netherlands  
[sikke.meerman@unilever.com](mailto:sikke.meerman@unilever.com) or  
Tim Dyer Unilever  
Australasia,  
[tim.dyer@unilever.com](mailto:tim.dyer@unilever.com)

### **The issue**

*Processing tomatoes need a balance of nutrients. Some of these nutrients can be created locally (for example with the use of legume crops in a tomato rotation, biologically fixing nitrogen by rhizobium bacteria living on the roots of legume plants), and some must be imported. Nutrients are lost from the soil by crop removal, erosion, leaching and emissions to the air.*

*Striking a sustainable balance between inputs and outputs presents a significant challenge for tomato growers, in determining the nutrient and fertilizer requirements.*

*An initial review of processing tomato farms supplying Unilever across Australia, Brazil and California identified nutrient management and the use of diagnostic tools as areas requiring improvement.*

*On several farms prior to SAP, crop fertilizer input requirements were determined based on historical programs and rules of thumb with limited consideration of the soil conditions and inherent soil fertility.*

### **Addressing the issue**

The Australian pilot has;

- Reviewed Choice of fertilizers used, Rates of application, Application methods, Frequency of application and Timing.
- Reviewed use of renewable fertilizer sources.
- Conducted shallow and deep soil profile sampling and analysis before and after planting for each season.
- Developed nutrient budgets for each pilot farm for Nitrogen (N), Phosphorous (P) and Potassium (K).
- Conducted nitrate (NO<sub>3</sub>) leaching studies and developed climatic (& irrigation) water balance models.
- Evaluated ground water NO<sub>3</sub> levels on farms and surrounding areas.
- Developed training systems, monitoring and management tools to assist in improved nutrient decision making on tomato farms.

### **Progress**

The Australian pilot farmers have learnt that;

- On some farms nitrogen fertilizer input rates could be reduced by as much as 50% without affecting crop yield, thereby saving costs for farmers and improving yields, all through more informed soil management and nutrient budgeting.
- Several Australian tomato growers have increased their use of soil sampling and plant tissue analysis with some encouraging results.
- Leaching of nutrients can cause losses of applied nitrogen on some farms due to inefficient nitrogen fertilizer and water management practices.
- Glenn Rorato, Unilever tomato grower from Jerilderie, New South Wales is one such grower that went from taking virtually no soil tests to conducting over 190 soil tests for the 2002/2003 tomato season. Glenn believes the information gained from increased soil testing has reduced his fertilizer requirements by over 30% so far. Glenn considers that increased soil testing along with field soil surveys and precision farming techniques such as yield mapping has helped them understand which parts of their fields require nutrients and what nutrient input rates are required.

### **Challenges**

- Further research is required to understand the combined effects of fertilizer inputs, crop management and irrigation on leaching and atmospheric losses of applied nutrients and to identify renewable fertilizer sources.

