

## Efficiency of Soil and Fertilizer Phosphorus Use— New FAO Fertilizer and Plant Nutrition Bulletin 18

A 2008 publication released by the Fertilizer and Plant Nutrition Group of the United Nations Food and Agriculture Programme (FAO) provides an excellent, up-to-date summary of recent research on the efficiency of soil and fertilizer P use in agriculture. Authored by J.K. Syers of Mae Fah Luang University in Thailand, A.E. Johnston of Rothamsted Research in the United Kingdom, and D. Curtin of New Zealand Institute for Crop and Food Research Limited, the publication summarizes recent research results on the efficient use of soil and fertilizer P. The ever-increasing importance of fertilizers in food production around the world, which has been recently highlighted by severe reductions in food grain reserves, provides a very timely release for this publication.

Research related to the behavior of P in soils indicates that inorganic P exists in adsorbed forms in most soils, and becomes absorbed by diffusion into soil components. As a result of the reversible transfer between available and non-available forms of soil P, plant access to soil P is often reduced only temporarily. The report states: “P is largely retained by soil components with a continuum of bonding energies, resulting in varying degrees of reversibility.” The authors conclude that when using an appropriate time scale, P recovery values of up to 90% have been recorded, and indicates a high level of P use efficiency over time.

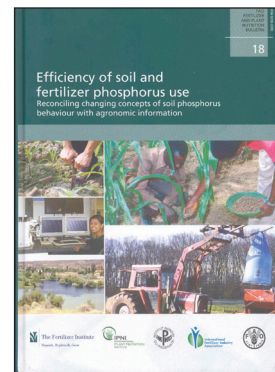
Evaluating soil residual P was an important part of this publication. This residual P contributes to solution P, which is the source of plant P uptake. Because a crop can only take

up a portion of P that is applied in the current year, measuring P supply from this fertilizer application over time becomes critical to effectively determining residual P from fertilizer additions. The authors reported that the “balance method” of measuring recovery and efficiency of fertilizer P is the preferred approach as it takes into account residual P in soils. This was preferred over the “difference method”, which does not consider residual soil P.

The authors conclude that given the nature of P dynamics in soils...transferring back and forth between available and unavailable forms for plants...understanding the contribution of previously applied P over a long period of time becomes critical to assessing P use efficiency. Long-term experimentation, which considers availability of residual P over a number of years, will provide a truer picture of the efficiency of soil and fertilizer P use. The publication also provides an excellent collection of case studies from various regions around the world detailing the calculation of P recovery.

The book is available from FAO; e-mail: [publications-sales@fao.org](mailto:publications-sales@fao.org). Or a PDF copy of the full 108-page publication can be downloaded from the FAO publications website at: <http://www.fao.org/docrep/010/a1595e/a1595e00.htm>.

**BC-INDIA**



## IPNI Crop Nutrient Deficiency Photo Contest—2009

To encourage field observation and increase understanding of crop nutrient deficiencies and other conditions, the International Plant Nutrition Institute (IPNI) plans to continue sponsorship of a photo contest during 2009.

“We always hope this competition will appeal to practitioners working in actual production fields,” said IPNI President Dr. Terry Roberts. “Researchers working under controlled plot conditions are also welcome to submit entries. We encourage crop advisers, and others to photograph and document deficiencies in crops.”

Some specific supporting information is required for all entries, including:

- The entrant’s name, affiliation, and contact information.
- The crop and growth stage, location, and date of the photo.
- Supporting and verification information related to plant tissue analysis, soil test, management factors, and additional details that may be related to the deficiency.

There are four categories in the competition: Nitrogen (N), Phosphorus (P), Potassium (K), and Other. Entries are limited to one per category (one individual could have an entry in each of four categories). Cash prize awards are offered in each of the four categories as follows: • First place = US\$150 • Second place = US\$75 • Third place = US\$50.

Photos and supporting information can be submitted until December 15, 2009 and winners will be announced in January of 2010. Winners will be notified and results will be posted on our website. The photos shown here are examples of two winning entries from India which were submitted to the 2007 edition of the contest.

Entries are encouraged from all regions of the world. However, entries can only be submitted electronically as high resolution digital files to the organization’s website, at [www.ipni.net/photocontest](http://www.ipni.net/photocontest).

For questions or additional information, please contact:

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**Nitrogen** deficiency in corn (submitted by S. Srinivasan, Tamil Nadu).



**Boron** deficiency in coconut (submitted by P. Jayakumar, Tamil Nadu).