

apparent risk to N loss can be reduced if compared with traditional N fertilization practice. The question of whether N rates of 120 and 180 kg/ha can sustain high grain yields in the next crop season requires further study. However, for optimum N management, fertilizer applications should be tailored to each specific field or region, because N availability and N use vary according to crop growth, soil fertility, and soil texture. **BC**

*Dr. Zhao is with the Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (CAAS), Beijing, 100081, China; e-mail: sczhao@caas.ac.cn. Dr. He is Deputy Director,*

*IPNI Northcentral China and Professor of Institute of Agricultural Resources and Regional Planning, CAAS, Beijing, 100081, China; e-mail:phe@ipni.net.*

## References

- Barbieri, P.A. et al. 2008. *Agron. J.*, 100:1,101-1,105.  
 Cui, Z.L. et al. 2009. *Plant Soil*, 317: 267-276.  
 He, P. et al. 2009. *Agron. J.*, 101:1,489-1,496.  
 Ju, X.T. et al. 2009. *PNAS*, 106:3,041-3,046.  
 Zhao, S.C. et al. 2012. *ISRN Agron.*, (Article ID 294514), pp.9.  
 Zhao, S.C. et al. 2010. *Plant Nutr. Fert. Sci.*, 16 (2):492-497.

## 4R Nutrient Stewardship – Update

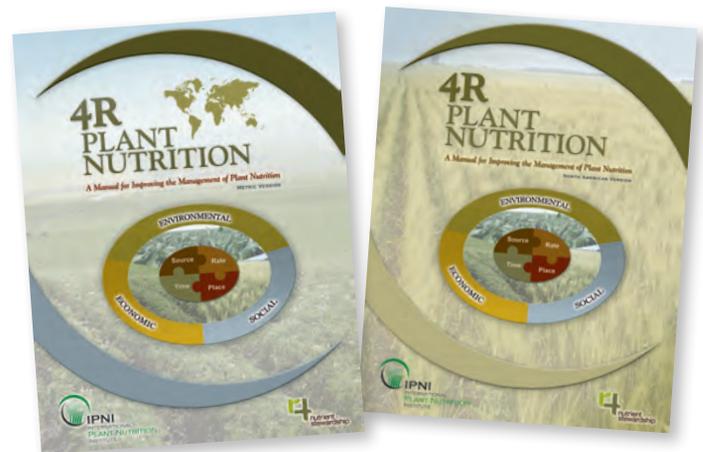
### *Metric Version of 4R Plant Nutrition Manual Now Available*

In further support 4R Nutrient Stewardship and its approach to implementing fertilizer best management practices, the International Plant Nutrition Institute (IPNI) has released a second version of its 4R Plant Nutrition Manual—one that is fully metric.

This metric version is a follow-up to IPNI’s initial release of the 4R Plant Nutrition Manual in March 2012, which was designed to fit a North American user through its predominant use of U.S. (Imperial) units.

4R Nutrient Stewardship is one of IPNI’s core strategies to support agriculture’s ability to meet the world’s production needs in a sustainable manner. The 4R concept is simple—apply the right source of nutrient, at the right rate, at the right time, and in the right place—but the implementation is knowledge-intensive and site-specific. 4R Nutrient Stewardship also considers economic, social, and environmental dimensions of nutrient management and because of these considerations 4R Nutrient Stewardship has been recognized by the world’s fertilizer industry as an essential approach to the ensuring sustainability of agricultural systems.

The 4R Plant Nutrition Manual includes chapters on the scientific principles behind each of the four R’s or “rights”. It discusses adoption of 4R practices on the farm, approaches



to nutrient management planning, and measurement of sustainability performance. The manual is intended to help the reader adapt and integrate the fundamental 4R principles into a comprehensive method of nutrient management that meets the criteria of sustainability. A mix of learning modules and case studies demonstrate the universality of the 4R Nutrient Stewardship concept through its application to diverse cropping systems used within small enterprises, large commercial farms, and plantations.

Both versions of the 4R Plant Nutrition Manual are in the form of a 130 page wire-bound book (8½ x 11 in.).

For details on ordering please visit our store at [www.ipni.net/store](http://www.ipni.net/store) or contact IPNI at [circulation@ipni.net](mailto:circulation@ipni.net) or 770-825-8082. Discounts are available for quantity orders of the manual. For more details or resources on 4R Nutrient Stewardship please see our 4R Portal at [www.ipni.net/4R](http://www.ipni.net/4R). **BC**