



Figure 5. A conceptual model of the process of developing and testing field data across large geographic scales (Murrell, 2008).

on-line community of over 90,000 annual users provides web access to the tools scientists need to collaborate on modeling, research, and educational efforts in nanotechnology. Is there need for a “Nutrohub”, a global plant nutrition research and education community? Such a community could have numerous groups, each with its own focus, but sharing communication and computing tools. Groups could develop integrated data management processes such as the one illustrated in **Figure 5**, developed for IPNI’s Global Maize project (Murrell, 2008). **DC**

Dr. Fixen is IPNI Senior Vice President, Americas Group, and Director of Research. He is located at Brookings, South Dakota; e-mail: pfixen@ipni.net.

References

Adviento-Borbe, M.A.A., M.L. Haddix, D.L. Binder, D.T. Walter, and A. Dobermann. 2007. *Global Change Biology* 13:1972-1988.
 Brouder, S.M. and J.J. Volenec. 2008. *Physiol. Plant.* 2008:1-20.
 Bruulsema, T.W., C. Witt, Fernando García, Shutian Li, T. Nagendra Rao, Fang Chen, and S. Ivanova. 2008. *Better Crops* 92(2):13-15.
 Darst, B.C. and L.S. Murphy. 1994. Keeping agriculture viable: Industry’s viewpoint. *J. Soil and Water Conservation* 46(2):8-14.

Dobermann, A. 2007. *In Fertilizer Best Management Practices*. International Fertilizer Industry Assoc., Paris, France.
 Evans, Alex. 2009. *The Feeding of the Nine Billion: Global Food Security for the 21st Century (A Chatham House Report)*. Royal Institute of International Affairs, London.
 FAO. 2008. *State of Food and Agriculture (page 62)*. Food and Agriculture Organization of the United Nations. Rome. On line at <http://www.fao.org/catalog/inter-e.htm>.
 Fedoroff, Nina V. 2008. *American Association for the Advancement of Science Annual Meeting*. On line at <http://www.pitt.edu/~super1/lecture/lec31911/001.htm>.
 Glenn, J.C., T.J. Gordon, and E. Florescu. 2008. *The Millenium Project: State of the Future*. World Federation of UN Associations, Washington, DC.
 IAASTD. 2009. *International Assessment of Agricultural Knowledge, Science and Technology for Development -Executive Summary of the Synthesis Report*. Island Press, Washington, D.C.
 Janzen, H. 2009. SOM research in 2030: what scientists then might ask of us now. *In Program and Abstracts for the International Symposium on Soil Organic Matter Dynamics: Land Use, Management and Global Change*. Colorado State University, Fort Collins. p. 114.
 Lobell, D.B., K.G. Cassman, and C.B. Field. 2009. *Annu. Rev. Environ. Resour.* 34:4.1-4.26.
 Murrell, T.S. 2008. Personal communication.
 National Academy of Sciences. 2009. *On Being a Scientist – a Guide to Responsible Conduct in Research, Third Edition*. Committee on Science, Engineering and Public Policy. The National Academies Press, Washington, D.C.
 National Research Council. 2009. *Informing decisions in a changing climate. Panel on Strategies and Methods for Climate-Related Decision Support of the Committee on the Human Dimensions of Global Change*, National Research Council of the National Academies. The National Academies Press, Washington, D.C. On-line at <http://books.nap.edu/catalog/12626.html/>.
 Thorup, J.T. and J.W.B. Stewart. 1988. Optimum fertilizer use with differing management practices and changing government policies. *In Proceedings of the 25th Anniversary Symposium of Division S-8, Advances in Fertilizer Technology and Use*. Published for the Soil Sci. Soc. A. by the Potash & Phosphate Institute (now the International Plant Nutrition Institute, Norcross, GA).
 Yang, H., A. Dobermann, K.G. Cassman, and D.T. Walters. 2006. *Agron. J.* 98:737-748.

Preparing for the 2010 International Certified Crop Adviser Exam Study Guide Available from IPNI

Individuals preparing for the 2010 International Certified Crop Adviser ICCA exam will be interested to know that an updated edition of the popular study guide offered by the International Plant Nutrition Institute (IPNI) is now available. The 173-page training guide is organized and updated each year by Dr. John Gilmour, Professor Emeritus, University of Arkansas, and published by IPNI.

The ICCA exam is based on performance objectives considered as areas of expertise that a Certified Crop Adviser (CCA) should possess. The performance objectives areas are: Nutrient Management; Soil and Water Management; Integrated Pest Management; and Crop Management. The study guide presents subject information for each performance objective, supplemented by sample questions. The study guide includes an answer key for the sample questions.

The 2010 edition of the ICCA exam study guide (Item #50-1000) is available for purchase directly from IPNI. The price of US\$50.00 includes shipping and handling. Contact: Circulation Department, IPNI, 3500 Parkway Lane, Suite 550, Norcross, GA 30092-2806. Phone: 770-825-8084; Fax: 770-448-0439. E-mail: circulation@ipni.net.

The ICCA exam study guide may also be purchased on-line by visiting this URL: www.ipni.net/ccamanual. **DC**

