Geographic Information and Spatial Technologies Workshop

Ag Canada — October, 2006 — Winnipeg, Manitoba, Canada

Technical Session on

Analyzing Precision Ag Data

An intermediate workshop on what is needed to move Precision Agriculture beyond mapping

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See http://63.78.10.20/basis/Workshops/AgCanada06/ for PowerPoint and Reference links

SITUATION— Until the 1990s maps played a minor role in production agriculture. Soil maps and topographic sheets, for the most part, were too generalized for application at the farm level. Acquisition of spatial data with the detail and information farmers needed for operations were beyond reach. The historical principle of **whole-field management**, based on broad averages of field data, has dominated management actions that treat an entire agricultural field as uniform within its boundaries. **Site-specific management**, on the other hand, recognizes the variability within a field and is about doing the right thing, in the right way, at the right place and time. It involves treating maps as numerical data and reacting to field variability by tailoring management actions, such as fertilization levels, seeding rates and variety selection, to match changing field conditions. The approach assumes that managing field variability leads to cost savings and production increases, as well as improved stewardship and environmental benefits.

WORKSHOP DESCRIPTION— This 3-hour intermediate workshop describes the basic concepts and approaches used in analyzing precision agriculture data for site-specific management. Numerous real-time demonstrations are used to reinforce the concepts presented and describe application approaches.

WORKSHOP TOPICS— **Topic #1, Spatial Analysis** discusses the nature of GIS maps and procedures for analyzing contextual relationships within and among mapped data. **Topic #2, Surface Modeling** establishes the fundamental concepts and procedures used in spatial interpolation of point samples into continuous maps. **Topic #3, Spatial Data Mining** investigates procedures for analyzing numerical relationships within and among mapped data for more informed decision-making.

WHO SHOULD ATTEND— The workshop is designed for scientists, agronomists, farm advisors, crop consultants, producers and others who have a basic understanding of precision farming technology and are interested in extending their analyses beyond mapping.

ONLINE REFERENCES (Berry)

Precision Farming Primer — a collection of popular "Inside the *GIS Toolbox*" columns published in the *@gInnovator* newsletter from 1993 through 2000. It uncovers the potential and pitfalls of the rapidly evolving field of precision farming—not only what precision farming can and can not do, but how it it is done.

http://www.innovativegis.com/basis/pfprimer/Default.html, particularly Appendix D

Map Analysis — a collection of popular *Beyond Mapping* columns published in *GeoWorld* magazine from 1996 through 2006. It is intended to be used as a self-instructional text or used in support of formal academic courses for study of grid-based map analysis.

http://www.innovativegis.com/basis/MapAnalysis/Default.htm, particularly Topics 2, 3, 7, 8, 10, 16 and 24