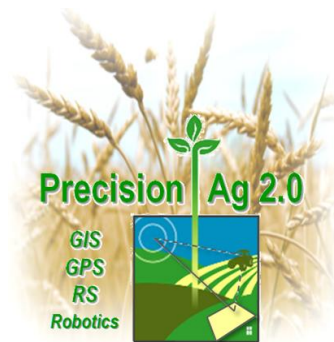


# Precision Agriculture's Bold New Era: A Brief History, Current Expression and Radical New Directions

Plenary address by **Joseph K. Berry**

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Now that precision agriculture is entering its third decade, where are we? Yield mapping is commonplace for many crops and locales. Site-specific management of field fertilization has a large and growing number of users. Remote sensing applications are maturing. Irrigation control, field leveling, variable rate seeding, disease/pest modeling, stress maps and a myriad other computer mapping uses are edging over the horizon. However, it is important to keep in mind that site-specific farming *isn't just a bunch of pretty maps, but a set of new and evolving technologies and practices that link mapped variables to appropriate management actions*. These revolutionary approaches are ushering in such radical changes as—

a shift in agriculture research from a historical emphasis on traditional experimental fields to "on-farm" research/studies; a mounting interest in "as applied" mapping of sensitive field inputs; a movement from traditional multivariate statistics to knowledge engines that assess patterns and relationships within and among map layers; and detailed modeling of agricultural flows and cycles that extends precision agriculture to "precision conservation." *This presentation investigates the legacy of Precision Ag's unique expression of Geotechnology, its current challenges and probable future directions.*

## Online References:

- **Beyond Mapping Compilation Series** is an online compilation of Beyond Mapping columns appearing in GeoWorld magazine 1989 to 2013 with many addressing Precision Ag topics. <http://www.innovativegis.com/basis/BeyondMappingSeries/>
- **Making a Case for SpatialSTEM: Spatial Considerations in Science, Technology, Engineering and Mathematics Education**, is a white paper describing a framework for grid-based map analysis and modeling concepts and procedures as direct spatial extensions of traditional mathematics/statistics. [http://www.innovativegis.com/basis/Papers/Other/SpatialSTEM/SpatialSTEM\\_case.pdf](http://www.innovativegis.com/basis/Papers/Other/SpatialSTEM/SpatialSTEM_case.pdf)
- **Applying Spatial Analysis for Precision Conservation across the Landscape**, J. of Soil and Water Conservation, Nov/Dec 2005, Vol. 60, No. 6, pg 22-29. J.K. Berry, J. A. Delgado, R. Khosla and F.J. Pierce. <http://www.jswconline.org/content/60/6/363>
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**Joseph K. Berry** is a leading consultant and educator in the application of Geographic Information Systems (GIS) technology. He is the principal of BASIS, consultants and software developers in GIS technology and the author of the "Beyond Mapping" column for GeoWorld magazine for twenty five years. Since 1976, he has written more than two hundred papers on the theory and application of map analysis techniques, and is the author of the popular books *Beyond Mapping*, *Spatial Reasoning*, *Map Analysis* and *GIS Modeling*. He has been writing, teaching and consulting in Precision Ag for over fifteen years. Dr. Berry holds a B.S. degree in forestry from the University of California, Berkeley, a M.S. degree in business management and a Ph.D. emphasizing remote sensing and land use planning from Colorado State University.