BUILDING A PHILOSOPHY AND ANALYTICAL FRAMEWORK FOR SITE-SPECIFIC EXPERIMENTS IN COMMERCIAL COTTON FIELDS Jeffrey L. Willers USDA ARS Genetics and Precision Agriculture Research Unit Mississippi State, MS

<u>Abstract</u>

Traditional experimental designs have proven themselves as useful tools for investigating many aspects of cotton production. However, there are other questions of interest that remain to be answered on larger scales such as entire fields or sets of fields. For these larger landscapes, the small plot experimental design approach is no longer sufficient. The availability of remote sensing data, variable-rate equipped machinery, yield monitors, and other spatial sensor systems offer novel opportunities. These advances when coupled to geographic information systems and generalized linear mixed model software create new methods of analysis. Examples illustrating concepts and selected solutions were presented.