

INTRODUCING CPAIDA: THE COTTON PRECISION FARMING INVESTMENT DECISION AID**Daniel F. Mooney****James A. Larson****Roland K. Roberts****Burton C. English****The University of Tennessee****Knoxville, TN****Abstract**

This article introduces the Cotton Precision Agriculture Investment Decision Aid (CPAIDA). CPAIDA is a stand alone, computerized decision tool for analyzing investments in precision agriculture technologies. It was developed to meet the need for better educational information about the returns required to pay for investments in precision agriculture technologies used by cotton farmers. Modules currently in CPAIDA include map- and sensor-based variable rate application of sprayer-applied chemicals, sensor-based liquid nitrogen application, and sensor-based weed control. Additional modules for calculating the cost of gathering spatial information via electrical conductivity, yield monitor, and remote sensing are also provided. The decision aid guides users through a systematic analysis of the precision farming investment decision via a set of clickable tabs and expandable menu options. The *equipment information* tab allows the user to select equipment components and enter purchase price. Default equipment complements are set for each module, and users can click on cells to change equipment manufacturers or modify prices. The *farm data* tab lets users personalize the decision aid based on their unique farm situation, information gathering costs, and payback parameters which can include input cost savings, lint yield gain, and reduced equipment operating and ownership costs. The *profitability summary* tab displays results in the form of enterprise budgets that compare cost and return estimates with and without precision farming. A final column indicates how individual cost items vary based on the precision farming investment decision and summarizes the expected profitability from adoption of the selected equipment complement. Finally, a *sensitivity analysis* tab displays the results graphically. The main figure summarizes the profitability of the proposed equipment complement and provides an estimate of the payback period in years. Here, users can change key cost and return parameters, such as farm size or input savings, and evaluate how changes in these values influence the profitability of the investment decision. With care in specifying values, users can evaluate a variety of “what if” scenarios for these technologies based on their particular farm characteristics.

The CPAIDA decision aid is available for download at <http://economics.ag.utk.edu/cpaida.html>. Copies of CPAIDA on a CD ROM may also be obtained by writing James Larson, Department of Agricultural and Resource Economics, 2621 Morgan Circle, 302 Morgan Hall, Knoxville, TN 37996. The authors gratefully acknowledge Cotton Incorporated for financial support.