IPNI Plant Nutrition TODAY
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PRECISION COTTON FARMING IN THE SOUTH

At the recent 10th International Conference on Precision Agriculture, Daniel Mooney from the University of Tennessee discussed the results of a 2009 survey of southern cotton farmers. Growers in 12 states (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, and Virginia) were surveyed regarding their attitudes toward, and use of, precision farming technologies. A total of 1,692 surveys were returned, of which 63% identified themselves as precision farming adopters, indicating that they had used information gathering technology, variable-rate management, or GPS guidance.

Grid and zone soil sampling were the two most widely used information-gathering technologies being used by southern cotton farmers (46% of respondents). Yield monitors with GPS, soil survey maps, and aerial photography were the next most commonly used information gathering technologies (15% to 20%). Least used by adopters were yield monitoring without a GPS, satellite imagery, handheld GPS/PDA, COTMAN plant mapping, digitized mapping, and electrical conductivity (less than 10%).

A yield monitor with GPS was the technology most frequently used to make variable-rate fertility or lime decisions. Handheld GPS units and electrical conductivity were also used to make fertilizer and lime decisions, while GreenSeeker optical sensors and aerial/satellite imagery were used most commonly for growth regulator and harvest aid decisions. Of the growers using variable-rate fertilization, 36% were using it to apply N, 73% for P, and 76% for K. Ninety-two percent of the respondents using a variable-rate management plan were varying lime application rates. Fifty-three and 69% reported a decrease in inputs after adopting variable-rate fertilizer and lime management plans, respectively. Conversely, 29 and 18% of the respondents experienced an increase in inputs using variable-rate fertilizer and lime, respectively.

Nearly half of respondents (47%) reported having adopted GPS guidance. Divided into guidance categories, one-third of adopters used GPS auto-steer technology, while one-quarter used GPS light-bar technology. Adopters used guidance for an average of 2.5 different field activities including spraying (79%), planting (63%), and tillage (59%) operations. One of the main reasons cited for adopting a guidance system was to improve overall input efficiency and an overwhelming majority (88%) indicated that guidance had met their expectations. Sixty-one percent of growers did not see any fertilizer cost savings as a result of using GPS guidance. However, just over half of the respondents reported chemical input savings of at least $5/A.

Nine out of 10 adopters believed precision farming would be profitable in the future. For non-adopters, 60% agreed that precision agriculture technologies have a profitable future in southern cotton farming. Findings from this survey will be useful to university extension and industry personnel in developing outreach efforts to support growers making decisions regarding precision farming technologies. The complete survey and accompanying publications can be accessed at: >http://economics.ag.utk.edu/precisionagpubs.html<.

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Abbreviations: GPS = global positioning system; N = nitrogen; P = phosphorus; K = potassium.