SUMMARY OF PRECISION FARMING PRACTICES AND PERCEPTIONS OF MISSISSIPPI COTTON PRODUCERS: RESULTS FROM THE 2013 COTTON INCORPORATED PRECISION FARMING SURVEY

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Abstract

The objectives of this study were 1) to determine attitudes toward and current use of precision farming technologies by Mississippi cotton producers and 2) to compare these results with past attitudes and adoption. There were 113 valid responses to the 2013 survey out of 619 mailings for an 18.3% response rate from Mississippi cotton producers. This compares with 128 valid responses out of 714 mailings which resulted in 17.9% response rate for the 2009 survey. The average age of respondents was consistent between the 2009 and the 2013 survey. The average years of farming experience decreased from 31 years in the 2009 survey to 27 years in the 2013 survey. The number of respondents thinking that precision technologies will be profitable in the future increased from 63% in the 2009 survey to 87% in the 2013 survey. The primary reason producers gave for adoption of precision technology was increased profitability, with 87% of the respondents giving that reason as very or extremely important. This compares with 47% of the respondents stating that being at the forefront of technology was very or extremely important in the decision to adopt precision technology in cotton production. The largest number of respondents indicated that they had adopted auto-guidance (66%).

Introduction

Precision farming has been hailed as a set of new technologies promising private economic gains and societal environmental benefits. These new technologies are used to identify and measure within-field variability and its causes, prescribe site-specific input applications that match varying crop and soil needs, and apply the inputs as prescribed. Reduction of input levels, increased efficiency of inputs as well as proper timing of the inputs can reduce costs as well increase yields/returns.

Because cotton is an important high-value crop in Mississippi, an assessment of the use of precision farming practices, an investigation into the factors that influence adoption of precision farming technologies, and an evaluation of the likelihood that cotton producers will adopt newly developed yield monitoring systems would provide important information for Mississippi cotton producers and agri-businesses alike.

The objectives of this study were 1) to determine attitudes toward and current use of precision farming technologies by Mississippi cotton producers and 2) to compare these results with past attitudes and adoption. A mail survey of cotton producers located in Alabama, Arkansas, Florida, Georgia, Louisiana, Missouri, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia was conducted in January and February of 2013 to establish the current use of precision farming technologies in these cotton producing states. This report provides information dealing with the Mississippi portion of the survey.

Materials and Methods

A mailing list of cotton producers in the fourteen southern states (including Mississippi) for the 2011 marketing year was provided by the Cotton Board in Memphis, TN. Following Dillman's (1978) mail survey methods, a postcard was first mailed to the list of cotton producers to inform them they would be receiving a mail survey on precision farming technologies in two weeks. On February 1, 2013, the initial mailing was sent to cotton producers, which included the survey questionnaire, a postage-paid return envelope, and a cover letter explaining the purpose of the survey. A reminder postcard was mailed a week later on February 8, 2013, and a follow-up questionnaire was sent to non-respondents three weeks later on February 22, 2013. The second mailing included a cover letter reiterating the purpose of the survey, the questionnaire, and a postage-paid return envelope. If recipients of the survey did not grow cotton between 2008 and 2012, they were instructed to return the survey unanswered.

Results and Discussion

There were 113 valid responses to the 2013 survey out of 619 mailings for an 18.3% response rate from Mississippi cotton producers. This compares with 128 valid responses out of 714 mailings which resulted in 17.9% response rate for the 2009 survey. The average age of respondents was consistent between the 2009 and the 2013 survey. The average years of farming experience decreased from 31 years in the 2009 survey to 27 years in the 2013 survey. The number of respondents thinking that precision technologies will be profitable in the future increased from 63% in the 2009 survey to 87% in the 2013 survey. The number of producers using agricultural dealers and extension service personnel for information related to precision agriculture decreased in the 2013 survey. The number of respondents using other farmers for information on precision agriculture was quite high, with no comparison available (Table 1).

Table 1. Responses to Selected Questions from the 2009 and 2013 Survey.

	2009	**2013**
Average Age of Respondents	56 Years	56 Years
Average Years Farming Experience	31 Years	27 Years
Percentage of Respondents Using Computers	54%	57%
Percentage of Respondents Thinking Precision Technologies Will Be Profitable in the Future	63%	87%
Percentage of Producers Using Ag Dealers for Precision Ag Info	65%	59%
Percentage of Producers Using Extension Service for Precision Ag Info	40%	19%
Percentage of Producers Using Other Farmers for Precision Ag Info	n/a	49%

The primary reason producers gave for adoption of precision technology was increased profitability, with 87% of the respondents giving that reason as very or extremely important. This compares with 47% of the respondents stating that being at the forefront of technology was very or extremely important in the decision to adopt precision technology in cotton production.

The largest number of respondents indicated that they had adopted auto-guidance (66%). As shown below in Figure 1, adoption rates of GPS auto-guidance by respondents increased dramatically in the 2006 through 2009 time period.

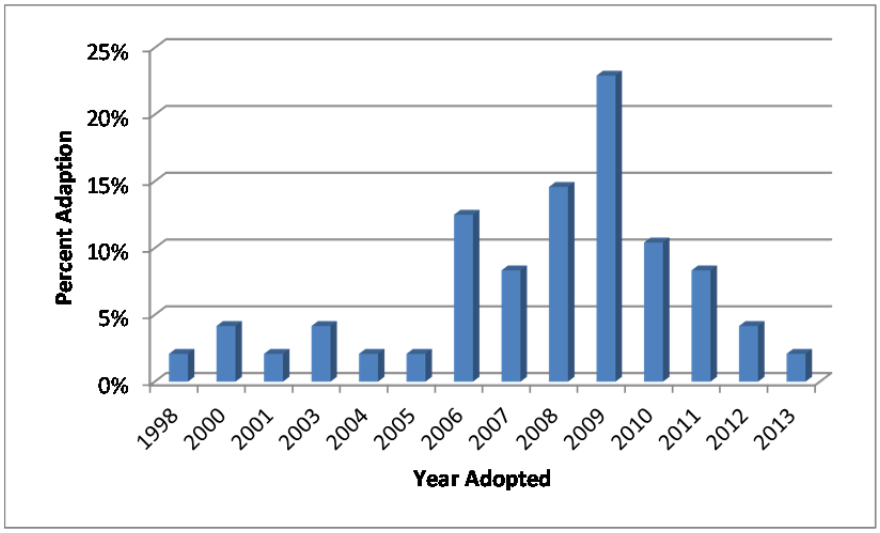

Figure 1. Percentage distribution of GPS Auto-guidance adopters by year.

Thirty-nine percent of respondents indicated that they had used grid geo-referenced soil sampling in their cotton production systems. As shown below in Figure 2, adoption rates by respondents peaked in 2009, which would be consistent with a response to the historically high fertilizer prices seen in 2008.

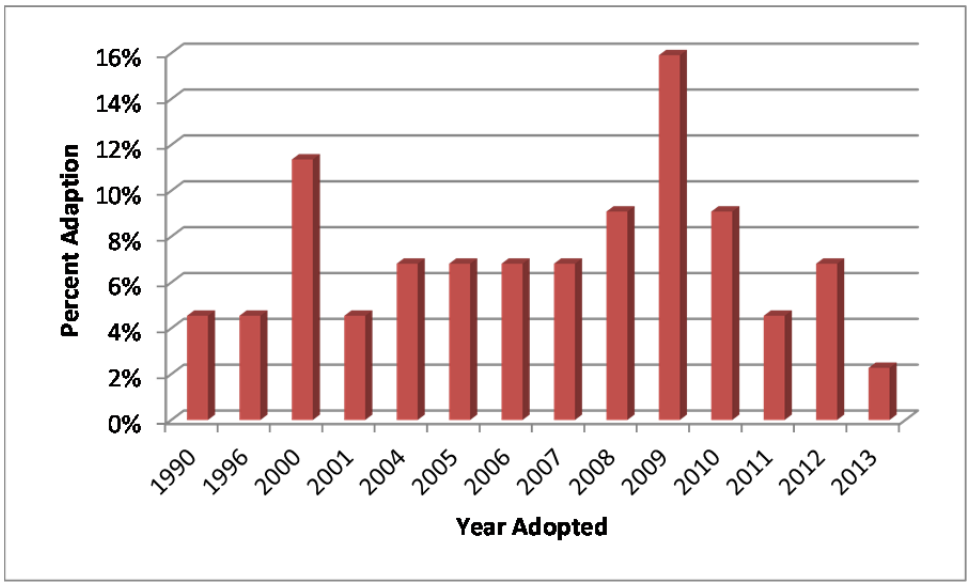

Figure 2. Percentage distribution of grid geo-referenced soil sampling by year.

Twenty-seven percent of respondents indicated that they had used GPS yield monitors in their cotton production systems. As shown below in Figure 3, adoption rates by respondents were highest in the 2008 to 2012 time period.

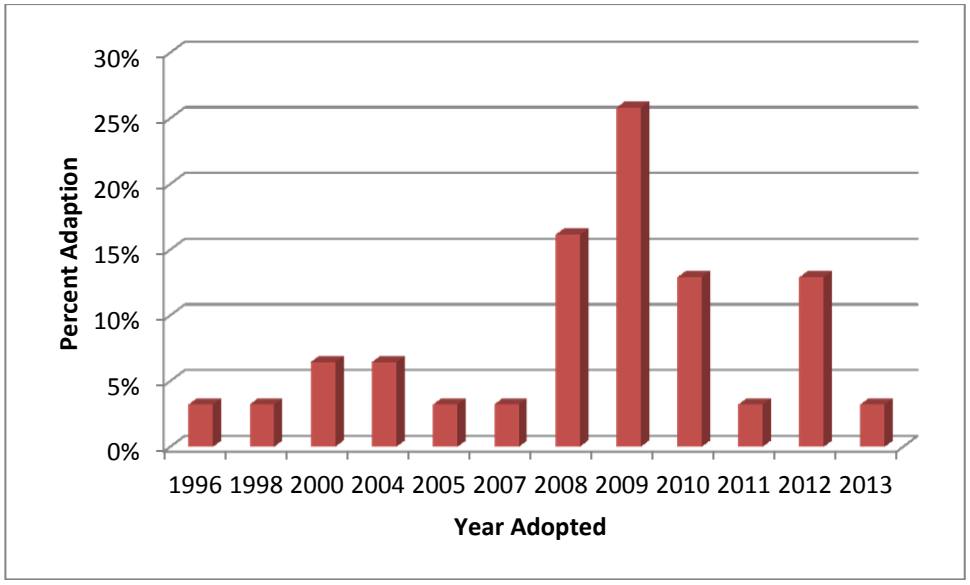

Figure 3. Percentage distribution of GPS yield monitors adoption by year.

Twenty-six percent of respondents indicated that they had used automatic section control sprayers in their cotton production systems. As shown below in Figure 4, adoption rates by respondents have ranged from 15% to 25% in the 2008 to 2012 time period.

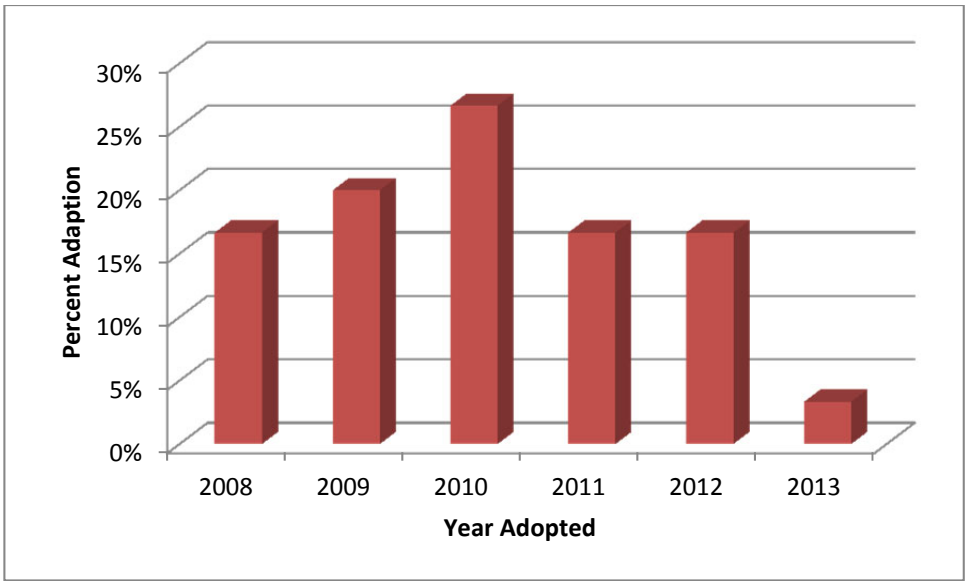

Figure 4. Percentage distribution of "auto-swath" sprayer adoption by year.

Acknowledgements

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References

Dillman, D.A. 1978. Mail and telephone surveys, the total design method. John Wiley & Sons, New York.