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North Carolina Cotton Farmers' Precision Farming Practices & Perceptions

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Introduction

Precision farming is a set of technologies with substantial promise to both individual economic gains and social environmental benefits. These information technologies, ranging from satellite imagery to grid soil sampling to soil survey mapping, are used to evaluate crop input decisions (seed, nitrogen, phosphorus, potassium, lime, growth regulators, fungicides, herbicides, insecticides, and drainage) and yield variability.

The future of precision farming in cotton depends on how the producers view the precision farming technologies. A thorough examination of producers' experiences with various precision farming techniques and the benefits they have received or expect in 2009 will shed more light on what is driving farmers' decisions to adopt precision farming technologies.

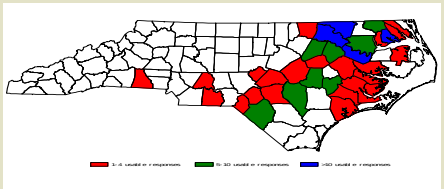
Objectives

- To determine the extent of precision farming adoption by North Carolina cotton farmers in 2009.
- To understand the reasons behind adoption /abandonment of precision farming technologies by North Carolina cotton farmers in 2009.
- To analyze North Carolina cotton farmers' attitudes and perceptions about precision farming in 2009.

Survey Methods

- Questionnaires similar to previous surveys in 2001 & 2005
- Surveyed 1,036 randomly sampled NC cotton farmers in early 2009
- Questionnaire and cover letter were mailed, then a reminder postcard with another questionnaire was sent
- Usable response rate of 16.3% (169 usable surveys out of 1,036 surveys sent)
- This response rate is higher than the 2005 response rate (12.3%), but lower than the 2001 response rate (22%).

No. of Usable Survey Responses



Adoption Rates for Different Precision Farming Practices

	Percent (%)
Adopted yield monitor is some form	13
Adopted grid sampling in some form	19
Adopted zone sampling in some form	17
Adopted precision soil sampling in some form	35
Adopted aerial/satellite imagery in some form	12
Adopted soil maps in some form	31
Adopted handheld GPS in some form	6
Adopted digitized mapping in some form	2
Adopted electrical conductivity in some form	2

Note: Out of the 169 usable responses in NC, 113 respondents (66.9%) adopted at least one precision agricultural technology in some form.

Variable Rate Technology (VRT) Adoption for Application of Fertilizer Inputs

	Percent (%)
Used VRT to apply N fertilizer based on VRT mgt. plan	9.5
Used VRT to apply P fertilizer based on VRT mgt. plan	16.6
Used VRT to apply K fertilizer based on VRT mgt. plan	18.3
Used VRT to apply lime based on VRT mgt. plan	21.9

Note: Out of the 169 usable responses in NC, 41 respondents (24.3%) made VRT fertilizer management plans.

Perceived Effect of Variable Rate Technology on Yields

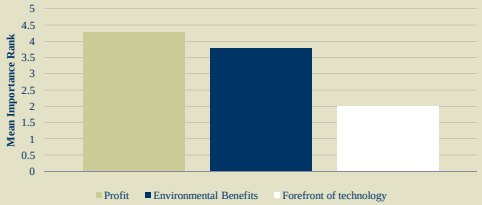
	Percent (%)
Incrased Yields	32.4
Did not change	64.9
Decreased Yields	2.7

Note: Only 37 respondents who "self-declared" to have used variable rate techonlogy answered this question .

Adoption of GPS Guidance Systems

	Percent (%)
Adopted GPS Lightbar	13
Adopted GPS Autosteer	19
Adopted other GPS guidance systems	17
Did not adopt any GPS guidance system	35
Did not respond to question	12

Reasons for Adopting Precision Farming Practices



Note: Farmers who adopted were asked to rank (1 to 5; 5 being the highest) the importance of the following reasons for adopting precision technologies: profit, environmental benefits, and being at the forefront of agricultural technology

Reasons for Not Adopting Precision Farming Practices

	No. of Respondents who mentioned this reason
Cost	54
Not time to adopt	5
Satisfied with current practices	46
Other (i.e. small field, not informed)	11

Will it be profitable to use precision farming technologies in the future?

	YES	NO	Total
Adopters	90.7%	9.3%	100%
Non-Adopters	77.8%	22.2%	100%

Main Conclusions

- About 67% of the surveyed North Carolina cotton farmers adopt some form of precision farming technology.
- The most common precision farming practices utilized by North Carolina cotton farmers are soil sampling, soil maps, and grid sampling.
- North Carolina cotton farmers who use variable rate technology typically use it for lime application and they tend to observe higher or no change in yields.
- Most North Carolina cotton farmers do not use GPS guidance systems.
- Profit is the most important reason for adopting, and cost is the most common reason for not adopting.
- Most NC farmers still think precision farming will be profitable in the future.

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