Joint Adoption of Conservation Agricultural Practices by Row Crop Producers in Alabama

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Conservation Agricultural Systems

Cover Crop and Residue Management

Conservation Tillage and Cash Crop Planting/Rotations

Nutrient and Pest Management

"*CSP will reward the best and motivate the rest.*"

- *Former USDA Secretary Ann M Veneman*

Incentives and Payment Structure of the CSP

Tier 1

Meet soil and water quality requirements on one field, pasture, orchard, etc.
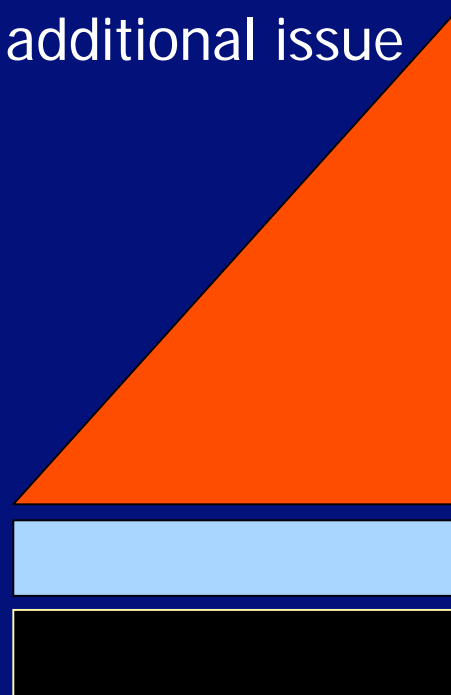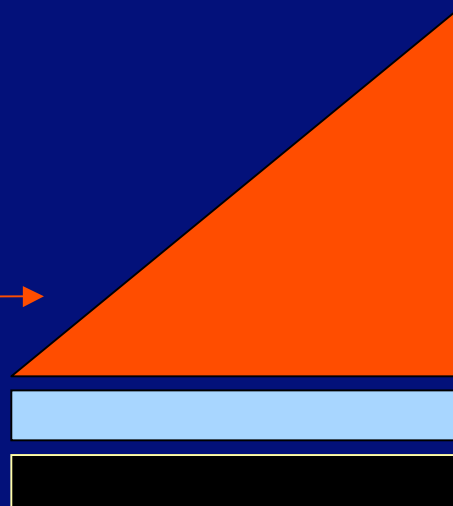
Tier 2

Meet soil and water quality requirements on whole farm operation and address one additional issue

Tier 3

Meet all resource requirements on whole farm operation and agree to additional activities

Enhancement Payments

Practice Payments

Stewardship Payments

Incentives and Payment Structure of the CSP
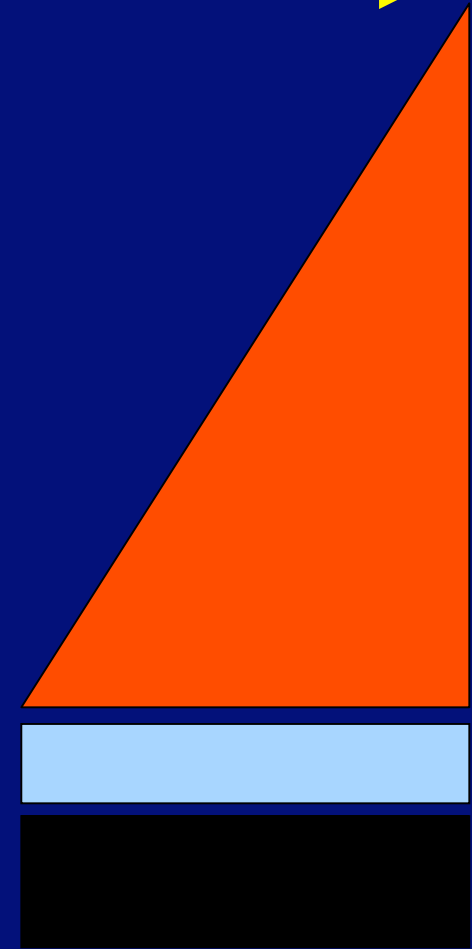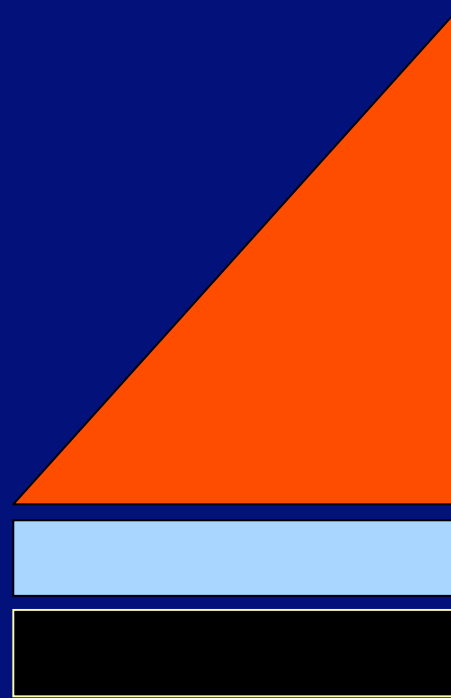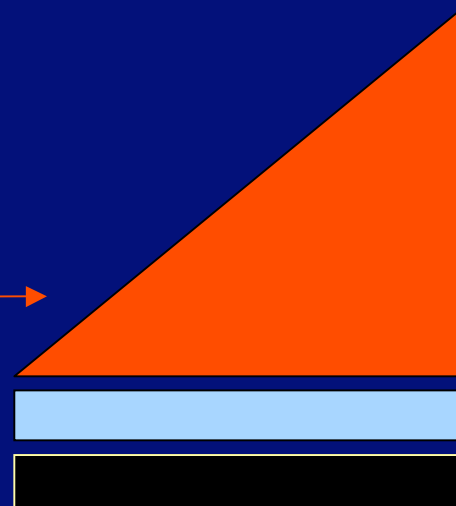
Tier 1   **Tier 2**   **Tier 3**

Conservation
Intensification

Enhancement
Payments

Practice
Payments

Stewardship
Payments

Purpose

To examine the joint adoption of conservation practices by row crop producers in Alabama. Specifically, the adoption of conservation tillage, cover crops and crop rotations.

Data Collection and Mail Survey

- Surveyed 5935 farmers in three Alabama watersheds
  - 1081 useable responses
  - 22.8% are Row Crop Producers and 80.8% Livestock Producers (some do both)
  - 23% response rate (above average for similar NASS surveys)

- Collected data on farm characteristics and demographics, socio-economic variables and conservation practice adoption.

1. Wheeler Lake Watershed

2. Upper Alabama Watershed
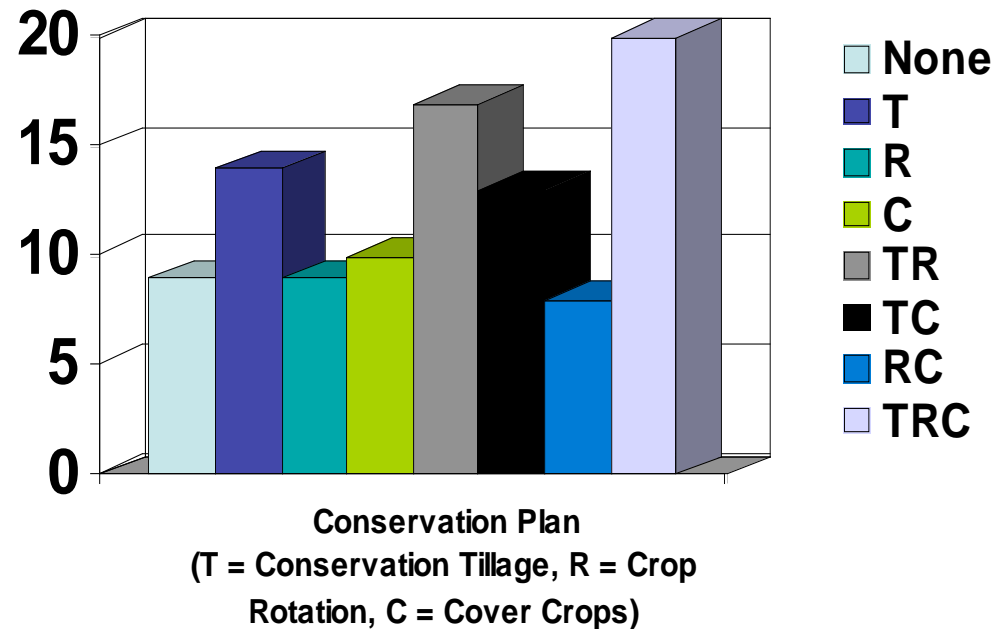
3. Upper Choctawhatchee/ Pea Watersheds
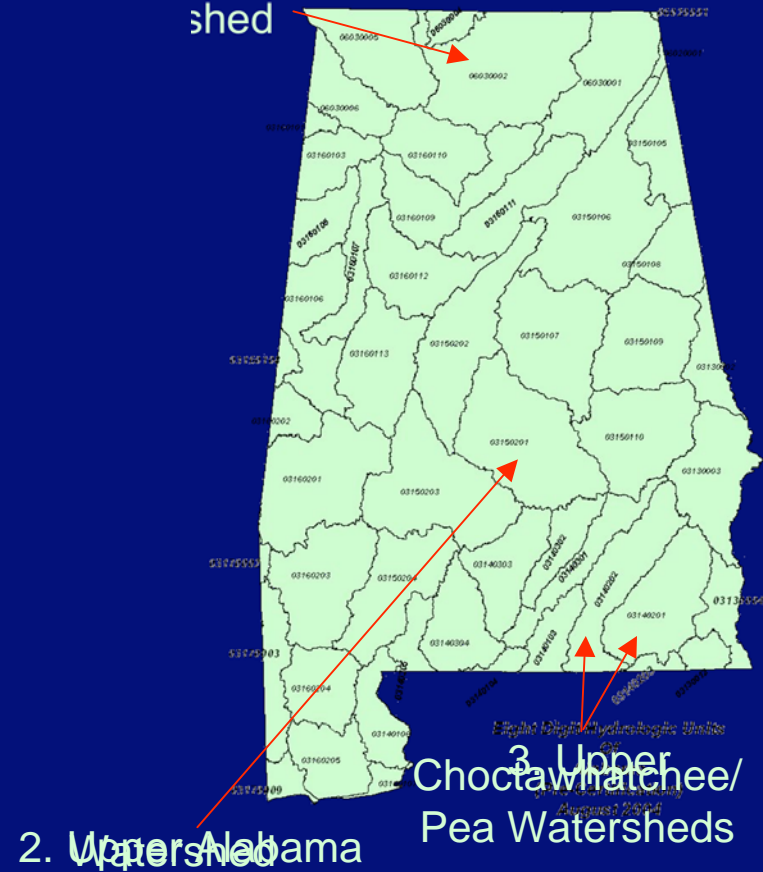
Dependent Variables

1. **Conservation Tillage (T)**

2. **Crop Rotations (R)**

3. **Cover Crops (C)**

Percent Adoption of Conservation Management Plans

Conservation Plan
(T = Conservation Tillage, R = Crop Rotation, C = Cover Crops)

Legend: None, T, R, C, TR, TC, RC, TRC

Explanatory Variables

Should I Adopt?

Factors affecting the adoption of practices include:

• Watershed

• Conservation Plan

• Conservation Program Participation (e.g. EQIP)

• NRCS Contact

• Choice of Cash Crops

• Farm Size and Land Usage

• Farm Sales, Income and Debt

• Age

• Education

Empirical Model

Multinomial Logistic Regression Model – Estimates the conditional probabilities of adopting the conservation management plans given the explanatory variables being examined.
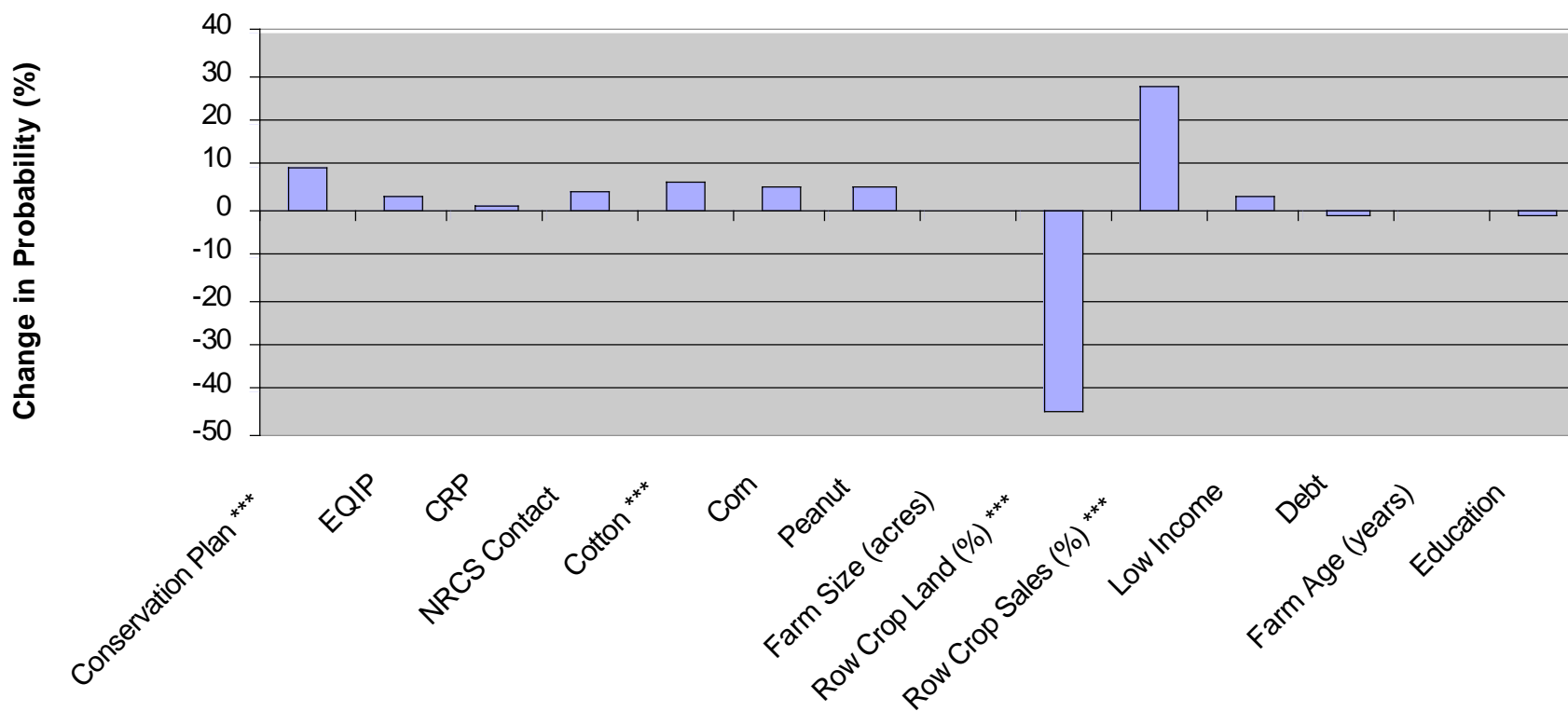
1. Estimate marginal effects.

2. Assess dependence between adopting different conservation practices

3. Estimate conditional probabilities of adopting conservation practices.

Marginal Effects

Change in Probability of Adopting All Three Conservation Practices Given A Change in One of the Explanatory Variables

Associations Between Adoption of Conservation Practices

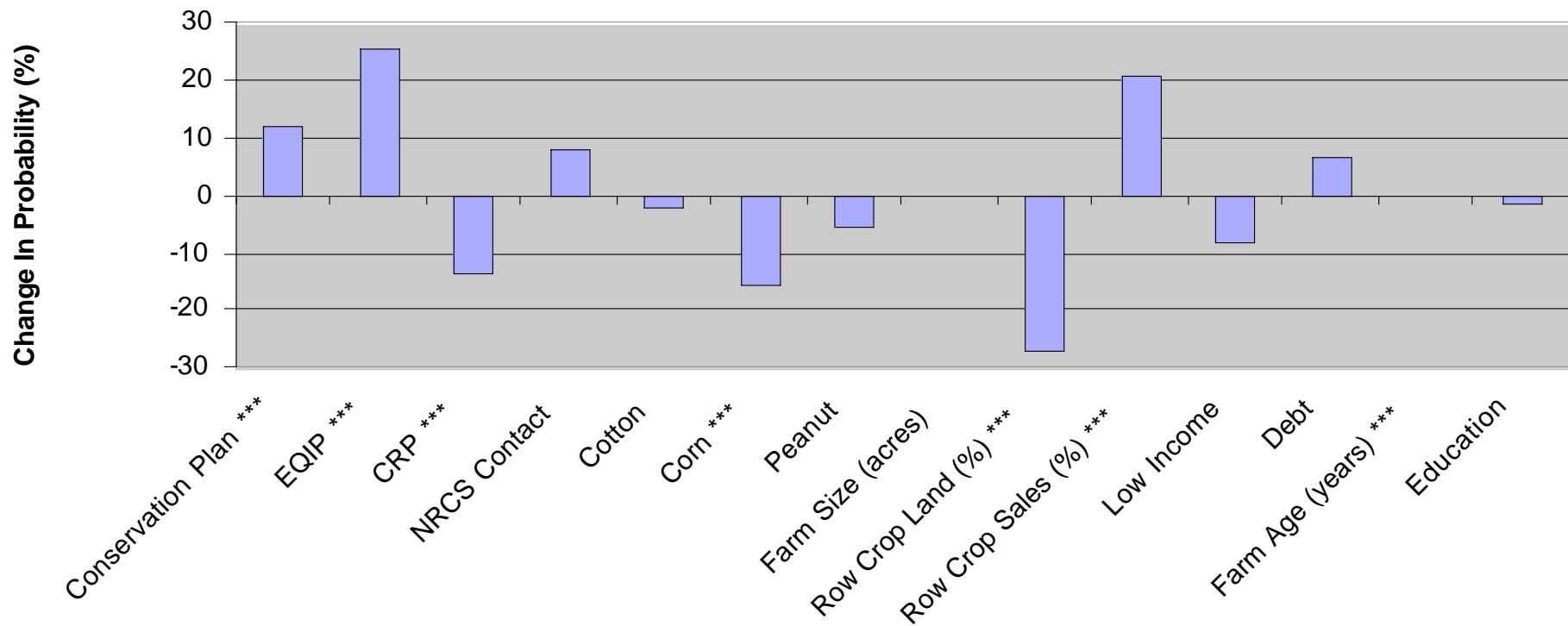| Table: Goodman and Kruskal's Tau Coefficients Between Conservation Practices			
	Conservation Tillage	Crop Rotation	Cover Crops
Conservation Tillage	---	0.1049** (0.0274)	0.0574** (0.0226)
Crop Rotation	---	---	0.0858** (0.0239)
Cover Crops	---	---	---

There is no strong association between the adoption of conservation practices. This may be due to the focus of adopting individual conservation practices in conservation programs and policy.

** Indicates statistical significance at the 10% Level

Conditional Probability of Adopting Cover Crops Given Conservation Tillage Has Been Adopted

Marginal Effects of Explanatory Variables on the Conditional Probability of Adopting Cover Crops Given Conservation Tillage Has Been Adopted
(Mean Probability = 0.51 (0.03) *)**

*** Indicates statistical significance at the 10% Level

Helping to Increase the Joint Adoption of Conservation Practices

Getting farmers to adopt systems:

1. **Help farmers develop sound conservation plans that focus on conservation systems.**

2. **Get farmers involved in conservation programs with financial assistance**

3. **Show farmers that conservation systems are profitable in a systems context**

4. **Get farmers involved with other successful farmers**