1. Introduction

- Farmers depend on nitrogen (N) additions to cropland to support high yields.
- N losses from these systems have significant ecological consequences, including water pollution and greenhouse gas emissions.
- Conservation Agriculture (CA) practices and tools have been developed to reduce N application and loss, but their adoption rates remain strikingly low among farmers.
- Subsidies are introduced to encourage adoption of CA practices and tools.

2. Objectives

- Evaluate corn growers’ Willingness To Accept (WTA) payments to adopt CA practices.
- Test the presence of learning and message effects in decision making.
- Compare the results from preference space and WTA space.
- Predict participation rates of proposed CA combinations.

3. General Design and Treatments’ Description

Before the choice tasks, respondents received two information treatments.

4. Choice Model Experiment

- Individual i’s utility from choice alternative j in choice situation t in preference space estimation:

  \[ u_{ijt} = x_{ijt} + \varepsilon_{ijt} \]

- Utility in WTA space to check robustness of preference space estimation:

  \[ u_{ijt} = \beta_0 + \beta_1 \text{WTA}_t + \beta_2 \text{WTA}_{ijt} + \varepsilon_{ijt} \]

5. Survey and Data

- The target population: corn growers in Michigan, Iowa, and Indiana.
- Mail survey, sample drawn from Farm Service Agency (FSA) of USDA.
- Total usable sample: 1294. Sent out 4800 surveys with 521 incomplete returns, the response rate is 27%.
- Comparison of results from preference space and WTA space.
- Predict participation rates of proposed CA combinations.

6. Estimation

- For preference space estimation: Random Parameter Logit (RPL) and Random Parameter Logit with error components (RPL-EC) models.
- Payment is assumed to be fixed and the four other attribute coefficients follow normal distributions.
- For WTA space estimation: RPL-EC. Payment is assumed to follow triangle distribution and the four other attribute coefficients follow normal distributions.
- Estimation was conducted in NLOGIT 5.
- Across samples comparison in preference space is conducted in R using combinatorial methods suggested by Poe, Graud, and Loomis (2005).

7. Selected Results

8. Conclusions

- Preference for status quo: payment is needed to move farmers away from current practices.
- The WTA for winter cover crop ranks the highest, while the WTA for sidedress ranks the lowest among the three proposed CA practices.
- The most favored CA combinations are (1) Saving Nitrogen, (2) Saving Nitrogen, and Prohibiting Fall Application, (3) Saving Nitrogen, and Applying Sidedress. Adopting all three proposed CA practices is least favored.
- Delay option raises WTA under positive message, but not under negative message.
- Positive message lowers WTA under immediate decision (in preference space estimation), but not under delaying decision.
- Predictions from preference space and WTA space are generally consistent.