Understanding Willingness to Accept (WTA) and Willingness to Pay (WTP) for BMP adoption and land use change

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INTRODUCTION

Achieving the water quality and quantity standards along while sustaining the agricultural production in the Upper Floridan Aquifer (UFA) region will require widespread implementation of advanced agricultural water and nutrient Best Management Practices (BMPs) and land use change.

This will require formulation of conservation-based incentive programs that are based on the understanding of how much incentive landowners will need to adopt new practices such that it still remains profitable for them, as well as how much public are willing to pay to support programs that can help improve the water quality and quantity in the region.

Objectives

- Understand landowner's Willingness to Accept (WTA) for programs that incentivize them for adopting certain BMPs.
- Understand general public's Willingness to Pay (WTP) for supporting those programs.

DATA

Results from farm/forest-scale economic and biophysical modeling of alternative cropping systems and BMPs will inform a producer's WTA payment survey and general public's WTP survey.

WTA

- Present producers with hypothetical descriptions of alternative Payment for Environmental Services (PES) programs, including expected payments and several other attributes (e.g., impacts on yield, profit, water use and so on)
- Ask them to indicate their preferred program in a choice modeling framework.

WTP

- Present respondents with expected environmental, and economic impacts associated with BMP adoption and land use change determined by our models
- Ask them to choose incentive program they can support based on the program attributes.

METHODS

Best-worst Choice Modelling

- Allows researchers to attain advantage of Best Worst Scale – comparison of utility of bundle attributes, as well as Discrete Choice Experiment – producing estimates of WTA and WTP compensation (Soto et al. 2016).
- Also, test the importance of two hypothetical bias calibration tools (Morrison and Brown, 2009): certainty scales and cognitive-dissonance minimizing techniques, which is critically important to stated preferences research but has not yet been done with BWC.

Table 1. Example of a Best-Worst Choice Experiment Question and Calibration tasks: Task 2b corresponds to Cognitive Dissonance Method and Task 3 to Certainty Scales.

Task 1: (Check one option as the most important and one option as the least important)

Referendum: Florida Ag/Forest Water Improvement Program

Most Important		Least Important
☐	Increase water quality from spring vents	☐
☐	Limit nutrient pollution from agriculture	☐
☐	Ensure environmental flows in aquatic systems	☐
☐	$5.00 monthly utility tax	☐

Task 2a: Would you vote YES for this program? ☐ *Yes* ☐ *No*

Task 2b:

☐	I would vote YES for this water improvement program.
☐	I support the goal of the program but not if it requires a monthly utility tax increase of $5.00 and thus vote NO.
☐	I support the goal of the program, but I cannot afford a monthly utility tax increase of $5.00 and thus vote NO.
☐	I support the goal of the program, but I would prefer to save my money and improve the trees in my own property and thus vote NO.
☐	I support the goal of the program, but I would vote No for the following reason:……
☐	I would vote NO for this water improvement program.

Task 3: How certain are you that you would actually vote "YES" for the previous water Improvement program, which increase your monthly utility tax by $5.00? (Please select an option below)

	Very uncertain 0	1	2	3	4	5	6	7	8	9	Very certain 10
Certainty of vote	○	○	○	○	○	○	○	○	○	○	○

Data Analysis

- The survey will also include background information about the survey and PES program features, questions about respondents' production, and demographic questions.
- Data will be statistically analyzed using appropriate methods (e.g., logistic regression analysis) to estimate the influence of specific programmatic features on the likelihood of respondents participating in the hypothetical PES program.

Expected Outcomes

The results from this study will provide us marginal WTA/WTP for different attributes and their levels that influences the landowner's/ public's decision to enroll or support in the hypothetical PES programs proposed in the study.

WTA

- Estimate a supply curve which will allow us to assess the level of BMP adoption or land use change that can be achieved under various levels of incentive payments.

WTP

- Estimate the perceived value to society (i.e. demand curve) for BMP adoption and land use change needed to achieve environmental changes.

Taken together, findings will indicate social welfare impacts associated with alternative BMP and land use change scenarios, and help inform public choices about PES program design and expected social value associated with policy interventions.

References

- Morrison, M., & Brown, T.C. 2009. Testing the Effectiveness of Certainty Scales, Cheap Talk, and Dissonance-Minimization in Reducing Hypothetical Bias in Contingent Valuation Studies. *Environmental and Resource Economics*, 44, 307–326.
- Soto, J. R., Adams, D. C., & Escobedo, F. J. 2016. Landowner attitudes and willingness to accept compensation from forest carbon offsets: Application of best–worst choice modeling in Florida USA. *Forest Policy and Economics*, *63*, 35-42.