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Public Preferences and Values for Purchase of Agricultural Conservation Easement (PACE) Programs in Georgia

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Conservation Easement (PACE) Programs in Georgia**

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Public Preferences and Values for Farmland Conservation Easements in Georgia

Introduction

The loss of farmland to urban and related development is an issue of considerable current interest in Georgia, especially in rapidly urbanizing counties. Many county governments and local private organizations are involved in efforts to preserve farmland. For example, a consortium of public and private organizations recently worked together to preserve 63 acres of farmland in Oconee County, GA through the purchase of conservation easements to the land. A conservation easement is a voluntary legal agreement between a land owner and the easement holder (e.g., government agency or private land trust) that places legal restrictions on development of the land in exchange for monetary compensation to the land owner. In the case of the Oconee County farmland conservation easement, the holder of the easement is a private organization, the Athens Land Trust. Funds for purchasing the easement were provided by the U.S. Department of Agriculture and the Georgia Greenspace Program (D'Avria, 2004). Active efforts and programs to preserve farmland through purchase of conservation easements are also underway in other Georgia counties including Carroll County and Fulton County (Chattahoochee Hills Country). There is also state-level interest in preserving farmland and other green and open space through programs such as the Georgia Greenspace program.

Public and private funds available to finance purchase of agricultural conservation easement (or PACE) programs are very limited. Thus, government agencies and private organizations involved in PACE programs need to prioritize expenditures of their limited funds. When public tax dollars are used in PACE programs, this prioritization involves

targeting protection of farmland that is most highly valued by the general public. Government agencies interested or involved in PACE programs therefore need information on public preferences and values for farmland protection. One of the primary categories of benefits the general public receives from agricultural land preservation are farmland amenities in the form of scenic pastoral or countryside views, wildlife habitat, agritourism and provision of local, fresh food supplies (e.g., pick-your-own operations). Very little is known about how specific attributes of farmland contribute to the amenity values people place on farmland preservation. The main purpose of this study was to collect and analyze survey data describing how public preferences and values for a PACE program in Georgia are affected by different attributes or characteristics of farmland the program would preserve.

Survey Design and Implementation

The PACE survey conducted for this study was part of a national study of public preferences and values for farmland preservation funded by the U.S. Department of Agriculture, National Research Initiative program.¹ In the first phase of this national study, focus groups were conducted in the states of Colorado, Georgia, Maine, Ohio and Oregon. The purpose of these focus groups was to identify specific farmland attributes or characteristics that influence preferences and values for farmland preservation. Focus group observations and data analysis suggested that farmland attributes of major concern to people when considering PACE programs include the location, quality and amount of

¹ Survey on Program to Purchase Conservation Easements in Georgia, 2002. Funding support provided by USDA National Research Initiative project entitled, “Improved Information in Support of a National Strategy for Open Land Policies”, Kevin J. Boyle (Project Leader) with Mary Ahearn, Anna Alberini, John C. Bergstrom, Lawrence W. Libby, Michael P. Welsh (Project Cooperators).

farmland preserved and the agricultural commodities produced on preserved land (Patterson et al, 2004).

The focus groups results were used to design a contingent choice survey of public preferences and values for a PACE program in Georgia. Contingent choice is an economic valuation technique that measures how preferences and values (e.g., willingness-to-pay) for a good or service are affected by specific attributes or characteristics of the good or service. The technique involves asking survey respondents to rank alternative “packages” with different combinations of attributes or preferences (Bergstrom and Ready, 2004; Champ et al, 2003). In the case of the Georgia PACE survey, respondents were asked to rank alternative PACE program “packages” with different combinations farmland attributes suggested by the focus group results. The PACE program attributes included multiple levels of the general attributes shown in Table 1. An example of one of the contingent choice questions used in the survey is shown in Appendix A.

Table 1. Attributes and Attribute Levels Included in the Georgia PACE Survey

Attributes	Attribute Levels
Commodity Produced	1. Grain Crops 2. Vegetables, Berries, Fruit and Nut Crops 3. Hay 4. Pasture Grass for Livestock 5. Timber
Location	1. Near Urban Areas 2. In Rural Areas
Quality	1. Prime agricultural soil 2. Non-Prime agricultural soil
Total Acres Preserved	1. 100,000 acres 2. 500,000 acres 3. 1,000,000 acres 4. 2,000,000 acres
One-time Cost to Household	1. \$3 2. \$5 3. \$7 4. \$10 5. \$25 6. \$50

The Georgia PACE survey was mailed to a random sample of 1,000 Georgia households in the spring of 2002. Names and addresses for the random sample were provided by a professional survey research firm. A total of 213 completed questionnaires were returned. After adjusting for undeliverable questionnaires due to bad mailing addresses (175) and people who returned the questionnaire blank (19), the effective response rate to the survey was 26.4%.

Georgia PACE Survey Results

In addition to contingent choice questions designed to measure preferences and values for PACE program attributes, the Georgia PACE Survey asked general questions about conservation easement preferences and attitudes related to agriculture and the environment. As indicated in Table 2, survey respondents placed a high priority on using conservation easements to preserve farmland and forestland in Georgia relative to other

types of preserved lands. Responses summarized in Table 3 generally show that survey respondents view farmland protection as being consistent and compatible with environmental protection. Survey respondents are supportive of farmers and farmland protection in general as indicated by the responses summarized in Table 4.

Table 2. Average Priority Score for Purchasing Conservation Easements to Protect Different Types of Land

Land Type	Average Priority Score on Scale from 1-6 (1= no priority; 6=high priority)
Farmland	4.89
Forestland	4.89
Lake Frontage	4.03
River Frontage	4.26
Ocean Frontage	3.92
Wetlands	4.34
Rangeland	3.44
Mountains	4.23
Undeveloped Land in Cities	3.92

Table 3. Average Agreement Score for Statements Related to Agriculture and the Environment Attitudes

Agriculture and Environment Attitude Statement	Average Agreement Score on Scale from 1-5 (1= strongly disagree; 5=strongly agree)
Farms help to protect water quality in lakes, rivers and streams	3.60
Farms help to protect the quality of well water people use for drinking	3.49
Pesticides and herbicides used by farmers are major environmental problems	3.51
Disposal of livestock manure is not a major environmental problem	3.16
Soil erosion from farms is a major problem	3.16
Farmland protects rural communities from flooding	3.38
Farms do not contribute to beautiful scenery	1.74
I like to see livestock in fields	4.42
Farms should not raise animals in feedlots and confinement buildings	3.31
Farms provide good wildlife habitat	4.29
Active farms reduce residential and commercial sprawl	4.11
Farms are an important part of rural communities	4.67

Table 4. Average Agreement Score for Statements Related to Farming and Farmland Protection

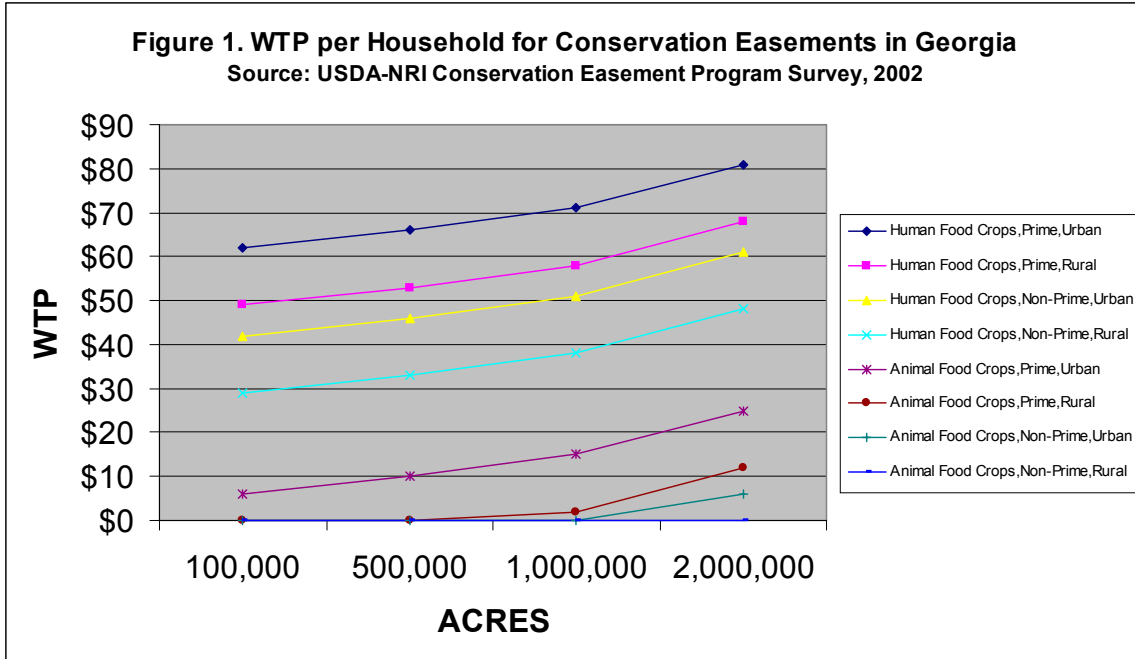
Farming and Farmland Protection Attitude Statement	Average Agreement Score on Scale from 1-5 (1= strongly disagree; 5=strongly agree)
Most farmers are not wealthy	4.17
The government bails farmers out too much	2.69
Farming is a more satisfying occupation than most others	3.45
The family farm must be preserved	4.31
Corporate farms are more efficient than family farms	3.02
Large farms get too many government benefits	3.40
Small farms are better stewards of the land than larger farms	3.66
Government should treat farms just like other businesses	3.04
Government should not protect farmland for future generations	1.92
Today's food is safer than it ever has been	3.17
Today's food is not as fresh as it has been	2.75
Our country is likely to suffer food shortages in the near future	3.02
Conservation easements help to insure our nation's food supply	3.62

Contingent Choice Modeling Results

Responses to the contingent choice questions included in the PACE survey were analyzed using a multinomial logit model that estimated the effects of the PACE program attributes shown in Table 1 on choices or preferences for different PACE program packages. The statistical results indicated that respondents placed highest preference on a PACE program that would target preservation of large amounts of prime farmland near urban areas used to produce human food crops (e.g., vegetables). Results indicated that

respondents placed lowest preference on a PACE program that would target preservation of small amounts of non-prime farmland in rural areas used to produce animal food crops (e.g., hay). The contingent choice modeling results were also used to estimate willingness-to-pay (WTP) for different PACE program packages in Georgia. These results are shown in Table 5 and illustrated in Figure 1.

Figure 1 illustrates how WTP for increasing acres of farmland preserved changes with different combinations of agricultural commodities produced (human food crop vs. animal food crops), soil quality (prime vs. non-prime) and location (urban vs. rural). As shown in Figure 1, WTP per household for PACE programs with different combinations of agricultural commodities produced, soil quality, and location increases for all programs as the amount of farmland preserved by the program increases. The exception is a PACE program that would target preservation of non-prime farmland in rural areas used to produce animal food crops for which WTP is always equal to zero. Figure 1 shows that WTP for increasing acres of farmland preserved is largest for a PACE program that would target prime farmland near urban areas used to produce human food crops. For this program, WTP is estimated at about \$81 per household per year. WTP estimates for PACE programs with other combinations of farmland attributes are given in Table 5.



**Table 5. Willingness-to-Pay Per Household for Georgia PACE Programs
By Commodity Produced, Quality and Location Attributes**

Commodity Produced, Quality, Location	Acres Preserved			
	100,000	500,000	1,000,000	2,000,000
Human Food Crops, Prime, Urban	\$62	\$66	\$71	\$81
Human Food Crops, Prime, Rural	\$49	\$53	\$58	\$68
Human Food Crops, Non-Prime, Urban	\$42	\$46	\$51	\$61
Human Food Crops, Non-Prime, Rural	\$29	\$33	\$38	\$48
Animal Food Crops, Prime, Urban	\$6	\$10	\$15	\$25
Animal Food Crops, Prime, Rural	\$0	\$0	\$2	\$12
Animal Food Crops, Non-Prime, Urban	\$0	\$0	\$0	\$6
Animal Food Crops, Non-Prime, Rural	\$0	\$0	\$0	\$0

Discussion

The valuation results from the Georgia PACE survey have several applications and implications. First, the results can be used by PACE program managers to allocate limited funds to preserve farmland of highest value to the general public. As discussed above, the survey results indicate that Georgia citizens place the highest preferences and values on preserving prime farmland near urban areas used to produce human food crops. These priorities are consistent with previous studies of preferences for farmland preservation programs. For example, the priority on preserving farmland near urban areas reflects the relative scarcity of farmland near urban areas and citizens' concerns about continued loss of green and open space and other farmland amenities. The priority on preserving prime farmland used to produce human food crops is consistent with citizens' general desires to protect the valuable natural resources (e.g., naturally fertile soils) and maintain access to local, fresh food supplies (Bergstrom and Ready, 2004).

The willingness-to-pay results reported in Table 5 can be used to estimate total benefits or value of PACE programs targeting different types and amounts of farmland. For example, suppose a statewide PACE program would preserve 500,000 acres of prime farmland located near urban areas used predominately to produce human food crops, 100,000 of prime farmland located near urban areas used predominately to produce animal food crops, and 100,000 acres of prime farmland in rural areas used predominately to produce human crops. The total benefits or value of preserving each type and amount of farmland is estimated by multiplying the value or benefit per household from Table 5 times the total number of Georgia households. The 2000 U.S. Population Census estimates there are currently about 3,000,000 households in Georgia.

According to the PACE survey results, the value or benefits per household of the 100,000 acres of prime farmland located near urban areas used to produce human food crops is about \$66 generating total statewide benefits of \$198 million ($\$66 \times 3,000,000$ households). The value or benefits per household of the 500,000 acres of prime farmland located near urban areas used to produce animal food crops is about \$10 generating total statewide benefits of \$30 million ($\$10 \times 3,000,000$ households). The value or benefits per household of the 100,000 acres of prime farmland in rural areas used predominately to produce human food products is about \$49 generating total statewide benefits of \$147 million ($\$49 \times 3,000,000$ households). Thus, total statewide benefits of the entire PACE program would be the sum of total statewide benefits for preserving each type and amount of farmland or \$350 million.

The results of the Georgia PACE survey indicate that there is strong demand for preservation of farmland in Georgia using conservation easements. These results of the Georgia PACE survey are consistent with additional research based on Georgia Poll data showing strong support for preservation of farmland in Georgia using funds generated by tax revenues and private donations (Dorfman et al, 2003). As public demand for farmland preservation in Georgia expands, information on public preferences and values for preserving different types and amounts farmland will become even more important for prioritizing and targeting limited public and private funds.

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Appendix A: Example of Conjoint Questions in Georgia PACE Survey

Suppose you had to vote between two conservation easement programs, Program A and Program B. These programs differ in terms of the attributes of the farms that would receive priority in the bidding process, the number of acres in the program and the cost to you. Please tell us which of the two programs you would support if you had to choose between Program A and Program B. You will also be able to tell us if you would vote for one of these programs or to do nothing.

	Conservation Easement Program A	Conservation Easement Program B
Farmland use priority	Growing Vegetables, Berries, Fruit And Nut Crops	No Priority
Farmland location priority	No Priority	Near Urban Areas
Land quality priority	Prime Farmland	Prime Farmland
Total acres of easements purchased in Georgia	100,000	1,000,000
One-time cost to your household in 2002	\$3	\$3

9. Which program do you prefer? **(PLEASE CIRCLE ONE NUMBER)**
1. Program A
 2. Program B
10. Now, suppose you could vote between Program A, Program B and doing nothing. How would you vote? **(CIRCLE ONE NUMBER)**
1. I would vote for Program A
 2. I would vote for Program B
 3. I would not vote for either program

The Center for Agribusiness and Economic Development



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Gale Buchanan, Dean and Director