November 2004 FREC RR04-01

Supplying Preservation: Landowner Behavior and the Delaware Agricultural Lands Preservation Program

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FOOD & RESOURCE ECONOMICS

FREC Research Reports

Department of Food and Resource Economics • College of Agriculture and Natural Resources • University of Delaware

November 2004 **FREC RR04-01**

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Supplying Preservation: Landowner Behavior and the Delaware Agricultural Lands Preservation Program. By Joshua M. Duke and Thomas W. Ilvento, Department of Food and Resource Economics, University of Delaware. FREC Research Report No. 04-01.

Abstract

This report presents the results of a survey of Delaware agricultural landowners about their characteristics, opinions, and behavior regarding participation in the Delaware Agricultural Lands Preservation Program, specifically the *PACE* and *Ag Dist* programs. The results demonstrate that participants tend to:

- Own larger farms
- Be more likely to raise corn, soybeans, and vegetables
- Have more decision makers
- Be much more likely to be full-time operators
- Be more likely to value working outdoors
- Be more likely to value ownership to pass land onto children.

The results also show that word of mouth is the most common way Delaware landowners learn about the *DALP* program. Owners' views about the *DALP* program were investigated. Key findings include:

- Participants and nonparticipants identified preserving land for family as the most attractive aspect of the *Ag Dist* program
- Both groups valued the *Ag Dist* program for its protection against agricultural nuisance suits and taxes
- A majority of *PACE* participants found that program attractive to relieve pressure from debt, to provide retirement security, and to reinvest in their operations
- A minority of *Ag Dist* participants and nonparticipants were interested in *PACE* to relieve pressure from debt.

Participants had positive experiences with the *DALP* process.

- Large majorities were satisfied with the *DALP* staff
- Large majorities of *PACE* participants were satisfied with the *DALP* procedures and outcomes
- A large majority of *Ag Dist* participants were satisfied with *DALP* procedures
- A majority of *Ag Dist* participants were satisfied with the outcome
- A large majority of participants would participate in *Ag Dist* if they had the chance to do it again
- Most *PACE* participants are using *PACE* money for investments
- Some *PACE* participants are using *PACE* money to pay debts.

Keywords: Purchase of Agricultural Conservation Easements, Purchase of Development Rights, Agricultural Preservation Districts

Funding: Research support provided by USDA's NRICGP award number 00-35401-9350; project title: "Satisfaction and selection in evaluating purchase of development rights programs."

Acknowledgement: We are grateful for the assistance of Michael McGrath and Stewart McKenzie. We benefited from Mark Davis' feedback to preliminary results. Maia Tatinclaux, Steve Ernst, Kristen Sentoff, Jennifer Campagnini, Gitau Mbure, and Jana Slovinska assisted with assembling the data set.

223 Townsend Hall
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Supplying Preservation: Landowner Satisfaction and Selection in the Delaware Agricultural Lands Preservation Program

Joshua M. Duke and Thomas W. Ilvento

1. Introduction

Delaware continues to experience rapid population growth—rates which exceed the region and the nation. Parts of every county in Delaware are experiencing the effects of growth, including traffic congestion, rising costs of providing services, crowding in schools, and the loss of farmland. Population growth, housing growth, and the resulting commercial expansion put significant pressure on agriculture land use.

Growth pressures manifest as forces that outbid agriculture for the use of land. The nature of this competition is not necessarily efficient, however. Agricultural land use offers many benefits to Delaware, which are not captured by the price system, while nonagricultural land uses shift costs to residents of the state. Farmland preservation policy attempts to correct for these market failures. Although such efforts have preserved over 100,000 acres in Delaware, the total outcome from the competition for land is a net loss of farmland. Delaware acres in farming dropped 24.7 percent between 1964 and 2002.

This report describes the results of a survey of agriculture landowners in Delaware, specifically targeting their participation in and willingness to participate in land preservation programs. By evaluating the performance of preservation efforts to-date, past successes are validated and future policy can be improved. This report evaluates two programs:

1. ***Ag Dist***. The Delaware Agricultural Preservation District program

2. ***PACE***. The Purchase of Agricultural Conservation Easement program

The survey covered the entire population of participants in these programs and included a sample of nonparticipating landowners.

Demand for Preservation in Delaware

Two previous surveys documented the public's demand for agricultural land preservation in Delaware. Duke and Ilvento (2004) used a conjoint experiment and a 2001 survey of 199 Delawareans to estimate the relative value of preserved land. Two key findings include an estimate of the public's willingness to pay for the existence of preserved acres: $7,586 per acre of agricultural land and $11,728 per acre of forestland.[1] Also, that study found that the public is very concerned about land preservation and has a high level of support for Delaware's program. The public is most concerned with preserving land in low- or high-growth-risk areas—as opposed to moderate-growth-risk areas.

Duke and Aull-Hyde (2002) calculated the relative importance of the qualities of—or, services provided by—preserved agricultural land, using a survey of 129 Delawareans. The results allocated a quantitative preference ranking to ten qualities (Figure 1.1). Human-regarding external benefits from agriculture are found to be the most important to Delawareans.

Demand for preserved agricultural land in Delaware is substantive. Yet, no true market exists for landowners to supply these services to

[1] These values should be considered lower-bound estimates of value—because they ignore passive use and active use values. These figures are derived from values in 2001, and current values may be higher or lower.

the public. Indeed, land preservation involves many issues of the classic public goods problem, in which free riding prevents the optimal provision of public goods. The state government, however, offers the policy tools to help landowners supply the public goods being demanded by the public. This report is the first part of our evaluation of landowner behavior in this policy environment.

Supplying Farmland Preservation

The large-scale survey was conducted as part of a broader research program, investigating the effectiveness of land preservation programs. The research objective of the broader study was to answer the following three questions:

1. How do *PACE* program procedures affect participants?

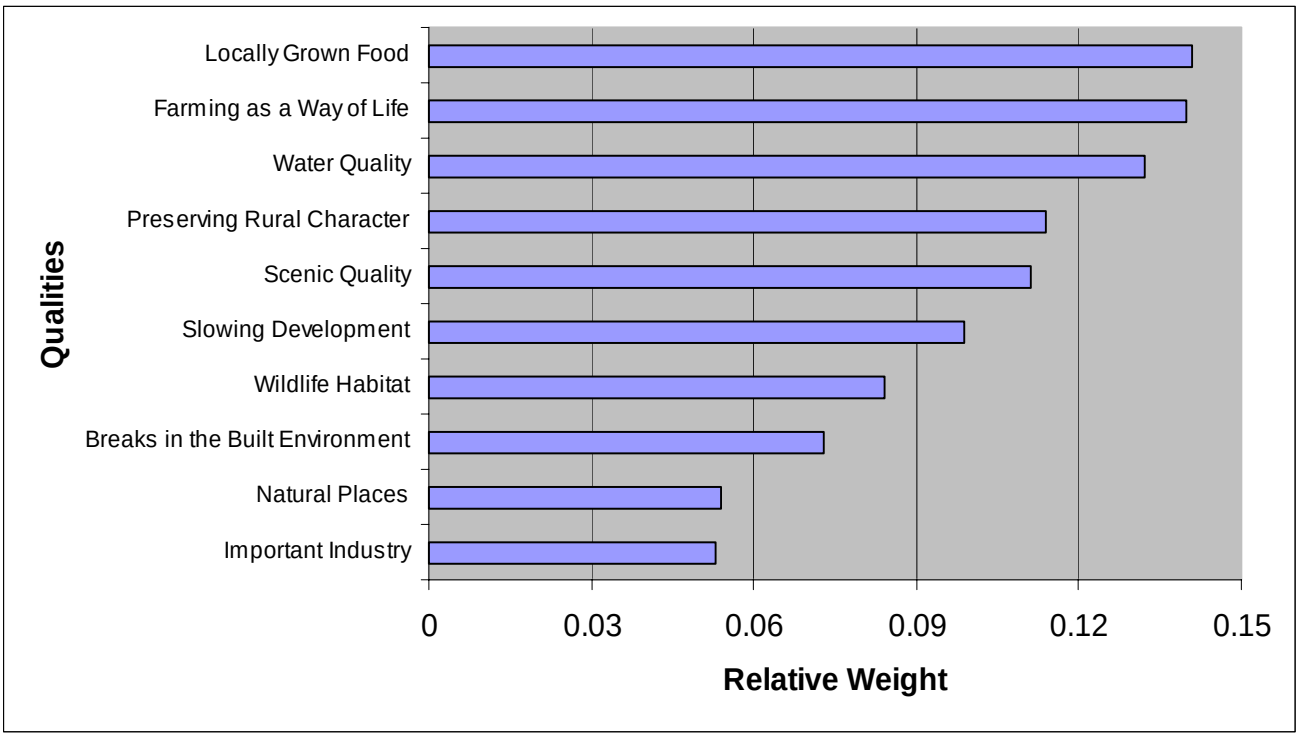
2. Are *PACE* program parcel-selection procedures cost effective?

3. How should *PACE* program procedures be modified, if at all?

This report describes the data collected to answer the first research question.

Roadmap for This Report

The second section details the policy environment to clarify the incentives facing landowners when making participation decisions. The third section describes the survey procedures. The survey results are then presented in several categories. Basic descriptive characteristics about the respondents and their farm operations are profiled in the fourth section. The fifth section offers measures of customer satisfaction with the state preservation program. Then, the way participants used *PACE* money is explained in the sixth section. The final section summarizes the results.



From Duke, Ilvento, and Hyde (2002)

Figure 1.1
Relative Preference for Preserved Agricultural Land

2. The Policy Environment

This section describes in detail the policy environment that faces Delaware landowners when making their decisions about supplying land preservation, i.e., participation decisions. A notational scheme is also used to account for the monetized benefits and costs of participation.

Farmland Assessment Program

The most flexible preservation program in Delaware is the use value assessment (*UVA*) program, which is administered by the counties under state authority (9 Del. C. § 8334, 2002).

Landowners opt-in yearly for this program to receive a preferential property tax assessment on most of their land. To be eligible, parcels over 10 acres must demonstrate sales averaging $1,000 in each of the two preceding years or show evidence that this is anticipated in the two ensuing years. For parcels under 10 acres, the eligibility threshold increases to $10,000 so as to prevent speculators from holding small parcels at low cost.

Participants who then convert their land to nonagricultural uses must pay roll-back taxes for up to 10 years of preferential taxation. *UVA* participants enjoy an additional benefit to agricultural use of land, B^{tax}, but they also incur the additional cost of roll-back taxes if they convert, C^{tax}.[2] These are assumed to be money-metric, pecuniary benefits and costs, which are measured relative to the status quo situation of not participating. This notation does not reflect nonpecuniary benefits and costs. For an approach to estimating behavior in the presence of nonpecuniary effects, see Duke (2004).

Ag Dist Program

Independent of their participation in *UVA*, owners may apply to participate in the state's two-tiered Agricultural Lands Preservation Program (*DALP*). The *DALP* program was enabled in 1991 and began enrolling parcels several years later (3 Del. C. § 901, 2002). Owners must first apply to form a new Agricultural Preservation District (*Ag Dist*) or join an existing one.

Ag Dist enrollment requires a 10-year commitment, followed by automatic renewals at five-year intervals unless the owners opt-out. By 2001, 129,163 acres had been enrolled in *Ag Dist*, which is 22.7 percent of the agricultural acres in Delaware (Delaware Department of Agriculture 2003). *Ag Dist* participants are the only owners eligible to apply for permanent preservation in the *PACE* program.

The main eligibility requirements for new districts are:

1. A minimum of 200 "useable" acres;
2. Satisfaction of the minimum land evaluation and site assessment (LESA) score;
3. Having agricultural zoning (which is a less restrictive criterion than it would be in many other states); and
4. Land is not subdivided.

Owners with less than 200 acres may join existing districts if their property is within three miles of an existing district and it meets the other eligibility criteria.

These criteria thereby exclude from *Ag Dist* some parcels that were eligible for *UVA*. Specifically, some *UVA* parcels may be of lower quality in terms of LESA scoring, may be smaller, and may be subdivided. In practice, very few parcels in the northern half of New Castle County are eligible for *Ag Dist*, and, since this area has the highest population density and land values, *UVA* tends to provide farmers in this area with the only available (albeit temporary) assistance to remain in farming.

Relative to nonparticipation, the benefits of *Ag Dist* participation, B^{ad}, include:

1. The protection from nuisance suits;

[2] The owner index, *i*, is suppressed in the benefit-cost notation in this section.

2. Deed restrictions to notify residents in any new subdivision within 300 feet of an *Ag Dist* parcel that agriculture is the priority land use;
3. Prohibition on the development of any new occupancy within 50 feet of an *Ag Dist* parcel;
4. No property tax on unimproved land;
5. Exemption from the realty transfer tax; and
6. The option to apply to the *PACE* program.

The costs, C^{ad}, mainly consist of restrictions on development—rezonings and subdivisions are prohibited, though a single one-acre dwelling is permitted for relatives and farm workers for every 20 acres up to a maximum of 10 developed acres per parcel.

PACE Program

The *PACE* program constitutes the second tier of the *DALP* program. Several years after the *Ag Dist* program began operating, some of its participants began applying to the *PACE* program. At the time of survey enumeration, 64,830 acres, or approximately half of the total *Ag Dist* acres, were enrolled in *PACE* (Delaware Department of Agriculture 2003).

The *PACE* application process does not introduce additional eligibility requirements, but instead uses an auction to ration contracts among applicants. All applicants for a particular sign-up are ranked in terms of their parcel's quality, and a threshold level of quality is established based on the quality of the pool and the available funds. Then, the state pays for an appraisal on the easements of those applicants above the threshold.

The auction process works as follows. Let the per-acre appraised value be a. Owners of appraised parcels are then invited to bid on what percentage discount, d, on a they would be willing to accept. The state then accepts the deepest discounts on parcels until the funds allocated for the sign-up are exhausted.[3] To date, d has averaged 51 percent, and the final price paid, $(1-d)a$, has averaged $1,039 per acre (Delaware Department of Agriculture 2003).

At the time of enrollment, the benefits of *PACE* participation include those of *Ag Dist* plus money for the easement: $B^{pace} = B^{ad} + (1-d)a$. The costs, however, are permanent restrictions on development, C^{ad}. These costs are borne idiosyncratically, but have a market value of a. Thus, unobserved owners' preferences for agricultural landownership affect the manners in which B^{ad} and C^{ad} are borne and thus allow for heterogeneity among applicants in selecting d.

At any time, an owner may enroll a particular parcel in *Ag Dist* or *PACE*, but not both. Yet, owners may also have multiple parcels that are enrolled in *Ag Dist* or *PACE*.[4] So, for any parcel, the pecuniary benefits to the owner derived from state preservation programs will be drawn from the set $\{0, B^{tax}, B^{ad}, B^{pace}\}$. Costs could be defined similarly.

Since owners derive nonpecuniary benefits and costs from participation and since the joint effects of multiple program participation are not necessarily additive (i.e., risk preference), it is insufficient to model participation decision making in terms of net benefits. Nevertheless, the conceptual framework offers a concise statement of the net pecuniary benefits to owners of one or more parcels from participation in state preservation programs: $\pi^s = B^{tax} - C^{tax} + B^{ad} - C^{ad} + B^{pace} - C^{pace}$.

[3] Two qualifications are in order. First, applicants may challenge the appraisal with their own independent appraisal. Second, the DALP enabling law was amended in the late 1990s so that 25 percent of funds were required to be spent within three miles of a state-designated metropolitan region. This altered the performance of the auction and the incentives to the participants.

[4] In 2003, 4.3 percent of DALP participants had some parcels enrolled in *Ag Dist* and others in *PACE*.

3. Survey Methodology

Two data sets were merged for this study. The first data set—acquired from the *DALP* program records—identified *Ag Dist* and *PACE* parcels, including characteristics of these parcels and identification of their owners. These records, however, required considerable work to shift from parcels to landowners as the unit of analysis.

The reworking process proceeded as follows. From approximately 900 collections of parcels known as "projects," the DALP records were examined individually and sorted into approximately 400 owner units. For example, some owners were associated with a single project containing a single parcel. Other owners were associated with over ten projects, each containing multiple parcels. Difficulties arose with most projects since ownership often involved multiple owners, inconsistent addresses, and varying owners across projects. Care was exercised so as to group only those projects under a single owner unit when there was certainty.

From this set of owners, several types were excluded, including governmental owners and nonprofit trust owners. The 402 owners that remained should be viewed as private individual or corporate landowners. This entire population was surveyed.

Landowners not participating in the *Ag Dist* or *PACE* program (nonparticipants) were more difficult to isolate as a group and collect data on. There is also no list available of nonparticipating landowners, and the sample is censored. Our best available nonparticipant population was a Farm Service Agency (FSA) list of agricultural constituents in Delaware. Then, the survey used screening questions to ensure they owned agricultural land in Delaware. The DALP data set contained measures of soil quality, acreage, etc. The survey collected similar data on nonparticipants.

The second data set comes from a mail survey, which was administered during the spring of 2003. Data on participants and nonparticipants were collected. Many questions on the instrument were designed so that participants and nonparticipants could provide commensurable measures on key variables even though their circumstances differed. Nonparticipants were also asked additional questions about their land characteristics so as to provide measures similar to those available on participants in the *DALP* data set.

The Dillman (2000) tailored design method was followed in contacting the population of 402 participants and the sample of 310 nonparticipants. The first survey mailing included a $2.00 cash incentive.

Table 3.1
Survey Response Rates

	DALP Participants	Nonparticipants
Population Estimate	402	?
Number Surveyed	402	310
Contactable	361	250
Respondents (147 *PACE* +126 *Ag Dist*)	273	127
Response Rate	75.6%	50.8%
Usable Surveys for Econometrics in Duke (2004)	262	115

Among the participants, 361 were contactable, and the response rate was 75.6 percent. Table 3.1 offers the response rates.

For the nonparticipants, a random sample of 310 nonparticipants was selected from the FSA list in proportion to the population in the three counties in the state. There were 250 contactable owners, which excludes noncontactables and 24 people from the FSA list that replied that they did not own farmland. Ultimately, 127 surveys were returned from owners, for a response rate of 50.8 percent.

We believe this to be a reasonably representative sample of nonparticipants for statistical purposes, although we cannot verify this because the population of nonparticipating landowners in Delaware is unknown.

In sum, we have 400 responses to the survey project. Of those, 147 were landowners with some of their land involved in the *PACE* program; 126 landowners were in agricultural districts, but not involved in the *PACE* program; and 127 owners had land in agriculture, but did not participate in either program.

4. Respondent Characteristics

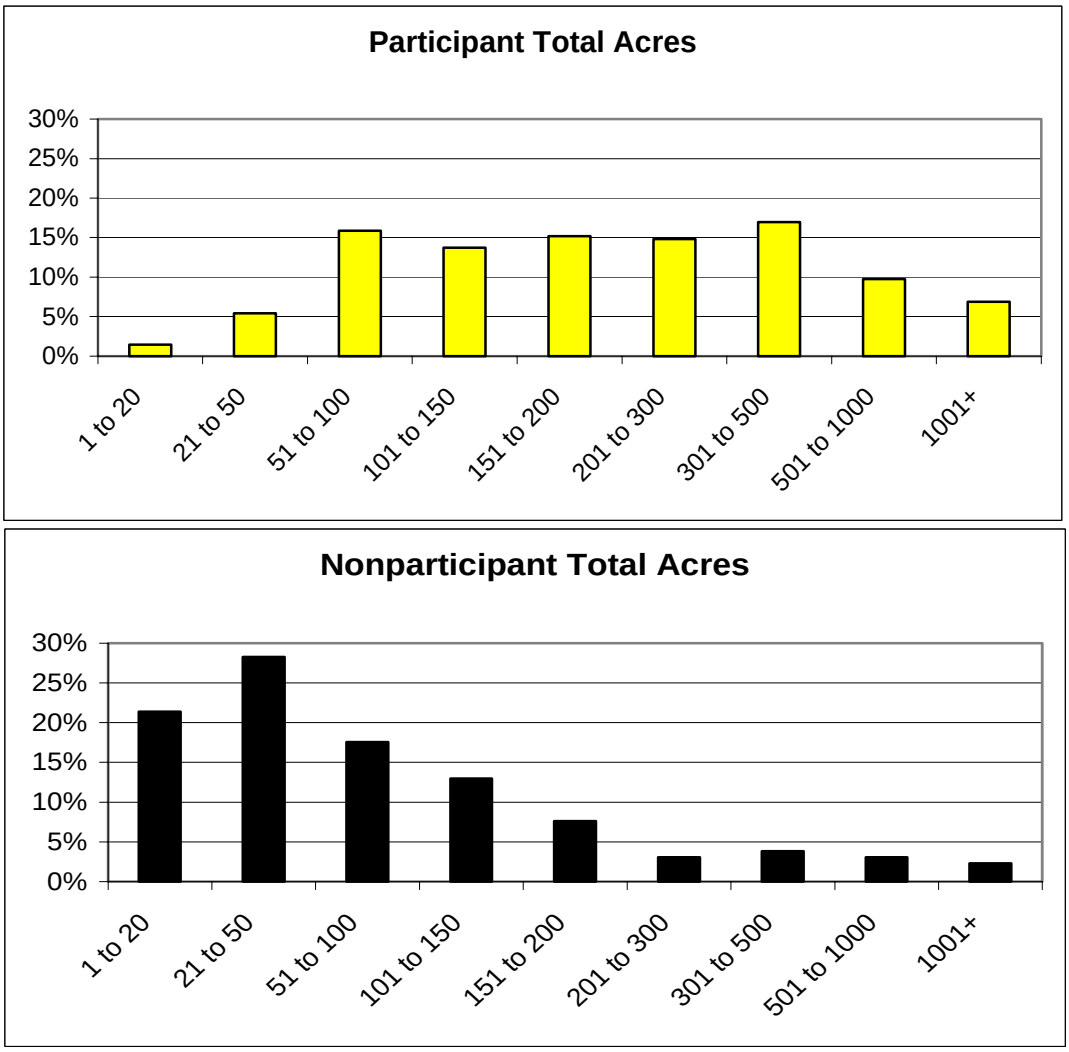
This section distinguishes the respondents' descriptive characteristics and farm operations. Most of the figures are presented so as to contrast the participants (273) and the nonparticipants (127). Some figures further breakdown participants into *Ag Dist* participants and *PACE* participants.

Acreage

Figures 4.1a-b show histograms of the total acres owned by participants and nonparticipants. Although some participants owned parcels that are not enrolled in the *Ag Dist* or *PACE* programs, all the parcels they own are listed in these two figures.

The data show that participants tend to own more acres than nonparticipants. For example, roughly half of nonparticipants own agricultural parcels totaling 50 acres or less. In contrast, only 7 percent of participants have farms this size.

The median acres owned by participants and nonparticipants were 196 and 52, respectively. Two forces may drive this asymmetrical result. Either the *DALP* program selects larger parcels, or owners of larger parcels tend to prefer participation relative to owners of smaller parcels.

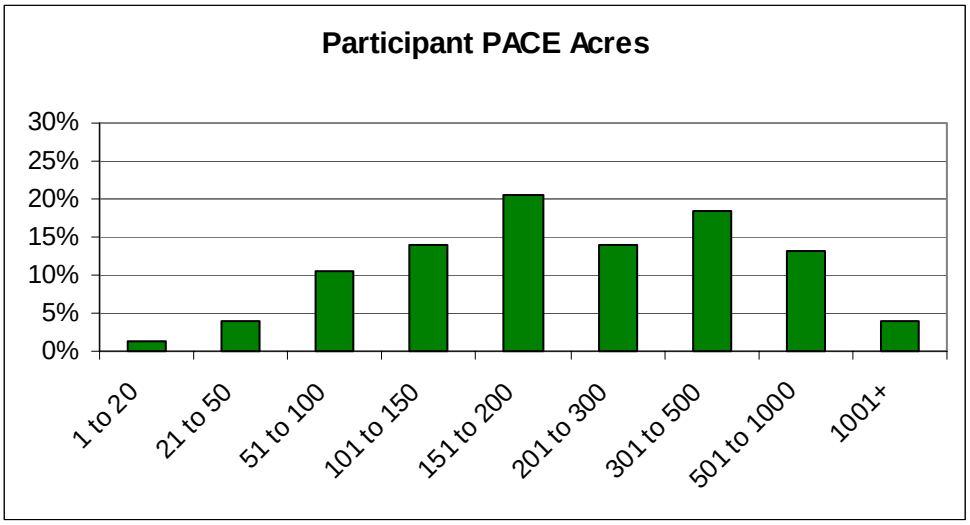


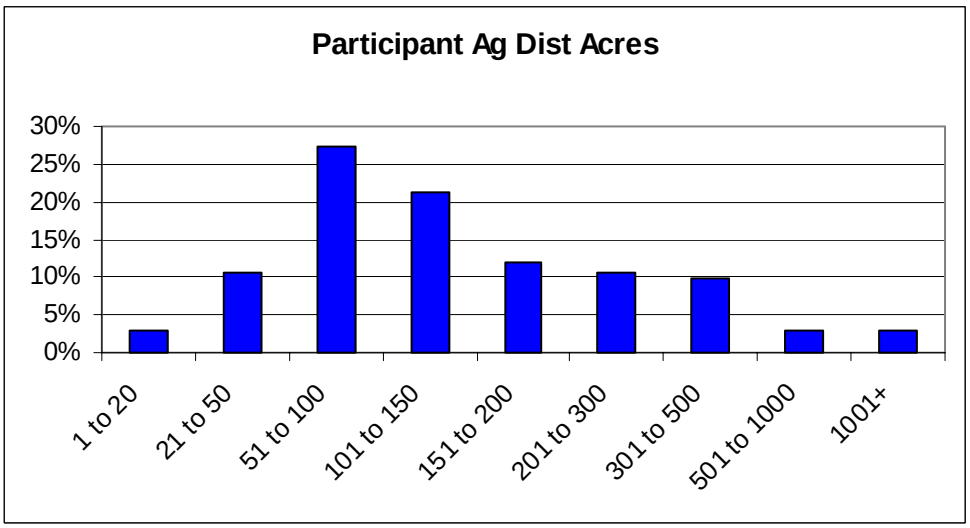
Figures 4.1a-b
Histograms of Total Acres Owned by Participants and

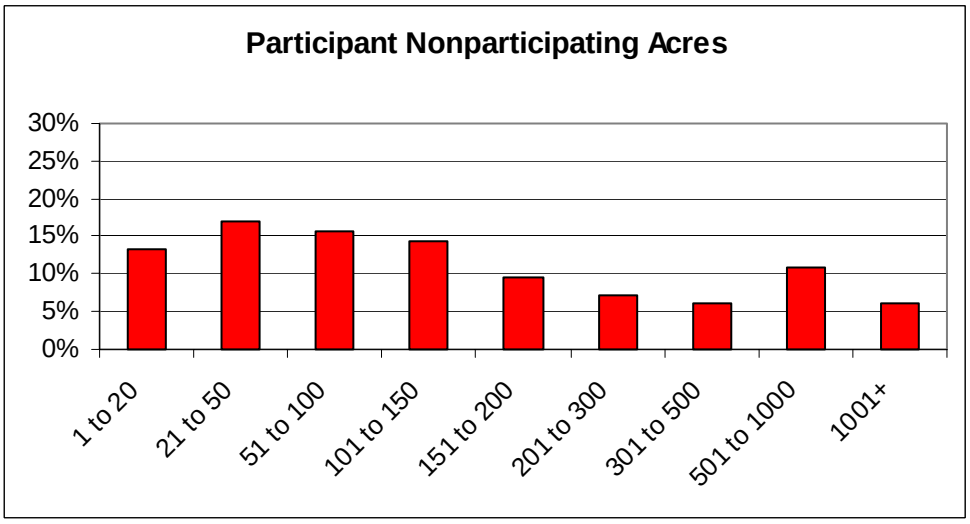
The difference in mean total acres owned between participants and nonparticipants is magnified—relative to the median—because several participants own very large acreages. Participants average 298 acres, while nonparticipants average 135 acres.

Among participants, it is possible to further breakdown their acreage totals into acres in *PACE*, in *Ag Dist*, or not enrolled in either. Among 273 participants, there were 151 with *PACE* acreage, 142 with *Ag Dist* acreage, and 83 with acreage not enrolled. Figures 4.2a-c show histograms of owner totals for these acreage breakdowns.

These data show that participants tend to enroll the largest parcels in *PACE* (median, 200 acres) and the moderate-sized parcels in *Ag Dist* (median, 127 acres). The distribution of parcels not enrolled, but owned by participants, tends to be more uniformly distributed across acreage.







Figures 4.2a-c
Histograms of Acres Owned by Participants by Type of Enrollment

Production Activities

There were minor, but important, differences across the three survey groups in terms of their farm operations. Table 4.1 shows a breakdown of agricultural activities by program type and enrolled or not enrolled parcels (for participants).

When looking at the enrolled acres of *PACE* participants, 12.6 percent had poultry operations in contrast to 7.7 percent on these participant's unenrolled parcels. Yet, all other livestock operations had a lower percentage for the enrolled parcels versus not enrolled parcels (7.4 percent versus 10.2 percent for dairy; .7 percent versus 5.1 percent for hogs; and 8.9 percent versus 10.3 percent for other livestock). The same trend held for *Ag Dist* participants.

For crop production, *PACE* participants tended to have higher frequencies on their enrolled parcels, with the exception of vegetable production. The opposite was true for *Ag Dist* participants, with the exception of corn production.

Table 4.1
Percent of Owner Pursuing Various Production Activities

	PACE		*Ag Dist*		Nonparticipants
Agricultural Activity	Parcels Enrolled	Parcels Not Enrolled	Parcels Enrolled	Parcels Not Enrolled	
Poultry	12.6%	7.7%	17.0%	15.8%	15.7%
Dairy	7.4%	10.3%	2.7%	10.5%	0.0%
Hogs	0.7%	5.1%	2.7%	5.3%	2.5%
Other Livestock	8.9%	10.3%	10.7%	15.8%	11.6%
Corn	86.7%	74.4%	85.7%	78.9%	70.2%
Soybeans	88.8%	71.8%	87.5%	89.5%	71.1%
Vegetables	21.5%	28.2%	22.3%	31.6%	19.0%
Other Crops	52.6%	43.6%	50.5%	52.6%	50.4%

Note: Items do not sum to 100 percent because owners pursue simultaneous activities.

Operator Labor Patterns

The *PACE* and *Ag Dist* programs tend to have more household members involved in decision making and higher rates of decision makers that considered themselves full-time operators. Table 4.2 shows the average number of decision makers for each type of respondent.

Table 4.2
Household Decision Makers

	PACE	*Ag Dist*	Nonparticipants
Average Household Members involved in Decision Making	2.15	2.09	1.78

Table 4.3
Decision Maker Characteristics

Percent Operations with at least One	PACE	Ag Dist	Nonparticipants
Full-time Operator	40.2%	43.5%	17.2%
Part-time Operator working mainly on the Farm	8.6%	12.3%	7.8%
Part-time Operator working mainly off the Farm	18.0%	21.3%	21.6%
Decision Maker Retired	33.1%	30.4%	30.2%

Note: Items do not sum to one because some operations had more than one decision maker.

Ag Dist and *PACE* participants both had similar rates of full-time operators, both of which were more than double the rate of owner-operators among nonparticipants.

More *Ag Dist* owners worked part time than *PACE* owners, while *PACE* owners were slightly more likely to be retired.

The nonparticipating landowners had the highest percentage of owners that had no household members involved in operational decision making. This may reflect nonparticipating owners that are simply absentee landowners who are not involved in parcel decisions to any large extent.

In some ways *DALP* participants tended to fit a more traditional pattern of family farms—a land/family ethic—more household members involved in decision making and owners more likely to consider themselves full-time operators.

Opinions about Ownership and Farming

The survey investigated what owners valued about working on agricultural land and owning agricultural land. Tables 4.4 and 4.5 present these results. Respondents could select as many answers as they felt applied to them.

The most commonly identified reason to value working on a farm for both participants and nonparticipants was that it allowed one to work outdoors. "Working with family" was the least common reason identified by *PACE* participants and nonparticipants.

"Being your own boss," "working with nature," and "working outdoors," were more frequently valued by participants than nonparticipants.

All groups were most likely to report that passing land onto children was a reason to value owning land.

In every case, participants more frequently identified with the reasons to value owning land than nonparticipants.

Table 4.4
What Owners Value about Working on Farm

	PACE	Ag Dist	Nonparticipants
Working outdoors	72.1%	70.4%	60.3%
Being your own boss	64.0%	66.3%	52.6%
Working with nature	61.3%	59.2%	50.0%
Raising crops and animals	58.6%	51.0%	55.1%
Working with family	51.4%	54.1%	45.6%

Note: Columns do not sum to one because respondents checked all applicable answers.

Table 4.5
What Owners Value about Owning Farmland

	PACE	Ag Dist	Nonparticipants
Passing land onto children	71.9%	74.4%	63.7%
Stewardship of own land	67.6%	60.8%	49.6%
Connection to family heritage	60.9%	66.4%	52.9%
Control over land-use options	59.7%	50.4%	40.7%
Connection to nature	58.3%	52.8%	46.0%

Note: Columns do not sum to one because respondents checked all applicable answers.

5. Landowner Satisfaction

This section reports survey data characterizing participants' and nonparticipants' experience with, and their views about, the *DALP* program.

In general, the data suggest a high degree of satisfaction with the *DALP* program. Many aspects of the program are appealing to participants and nonparticipants. In certain areas, nonparticipant opinions about the program differ from participants and, in these cases, the asymmetry may help explain why nonparticipants have decided not to enroll.

The last several subsections address the specific experiences of *PACE* and *Ag Dist* participants with respect to the participation procedures. Both groups express a very high level of satisfaction, with *PACE* participants tending to have a slightly higher level of satisfaction than *Ag Dist* participants.

Knowledge of State Preservation Programs

All survey respondents were asked about their knowledge of the *DALP* program. Their responses help measure the effectiveness of past marketing and opportunities for future recruitment. Table 5.1 presents these results.

Most of the participants learned about the *PACE* or *Ag Dist* programs from other farmers (54.4 percent for each), which validates the perception that positive word-of-mouth is the most effective marketing technique.

The next most commonly reported source of program information was contacts with program staff (43.5 percent for *PACE* and 36 percent for *Ag Dist*), followed by brochures and the Internet. Clearly, leg work by the program staff has been an important way to generate participation.

Interestingly, a little less than one third of each type of participant group indicated they had heard about the programs via a news report.

Nonparticipants had a slightly different experience in learning about the *DALP* programs. Word-of-mouth was the most common route of knowledge and was even more frequently identified. News reports were similarly more frequently reported. Both of these may reflect the timing difference between nonparticipants and participants—by definition, nonparticipants had more years to learn about the program before making a decision.

Brochures are reaching nonparticapnts with greater frequency than participants. Surprisingly, no nonparticipating respondent has used the Internet to learn about the program.

Table 5.1
Knowledge of the Programs

How did you learn about the program?	*PACE*	*Ag Dist*	Nonparticipants
Brochures	9.5%	16.8%	24.1%
The Internet	9.5%	9.6%	0.0%
Other Farmers	54.4%	54.4%	67.1%
Personal Contact with Program Staff	43.5%	36.0%	11.4%
News Reports	31.3%	30.4%	45.6%
Other	2.2%	2.5%	2.8%

Note: Columns do not sum to one because respondents checked all applicable sources.

Views of Ag Dist Program

The survey involved a series of questions about why participants choose to enroll in the *Ag Dist* program and also why nonparticipants might be interested in it (Figures 5.1a-c). In all three cases, a majority said each reason was important in making their decision.

The graphing strategy for these types of graphs is to divide the response into two parts—important and unimportant—for each group. Along with this, intensity of the responses is clarified by darker shading.

An interest in preserving land for family members was the most critical factor for participants (65.5 percent and 62.4 percent replied "very important," respectively). This may reflect the land/family ethic. Not only did upwards of 90 percent consider "preserving for family" important, but most considered it very important and participants had the greatest intensity of this question. Estate taxes and lawsuit protection, while important factors, were less important for both groups.

It is interesting to note that nonparticipants were slightly more interested in protection from lawsuits—both in total and in intensity. *PACE* and *Ag Dist* program participants were interested in this attribute (57.7 percent and 62.4 percent felt it was an important consideration, respectively). But nonparticipants expressed an even higher level of importance. This may indicate an attribute of the *Ag Dist* program that can be used in future marketing to nonparticipants.

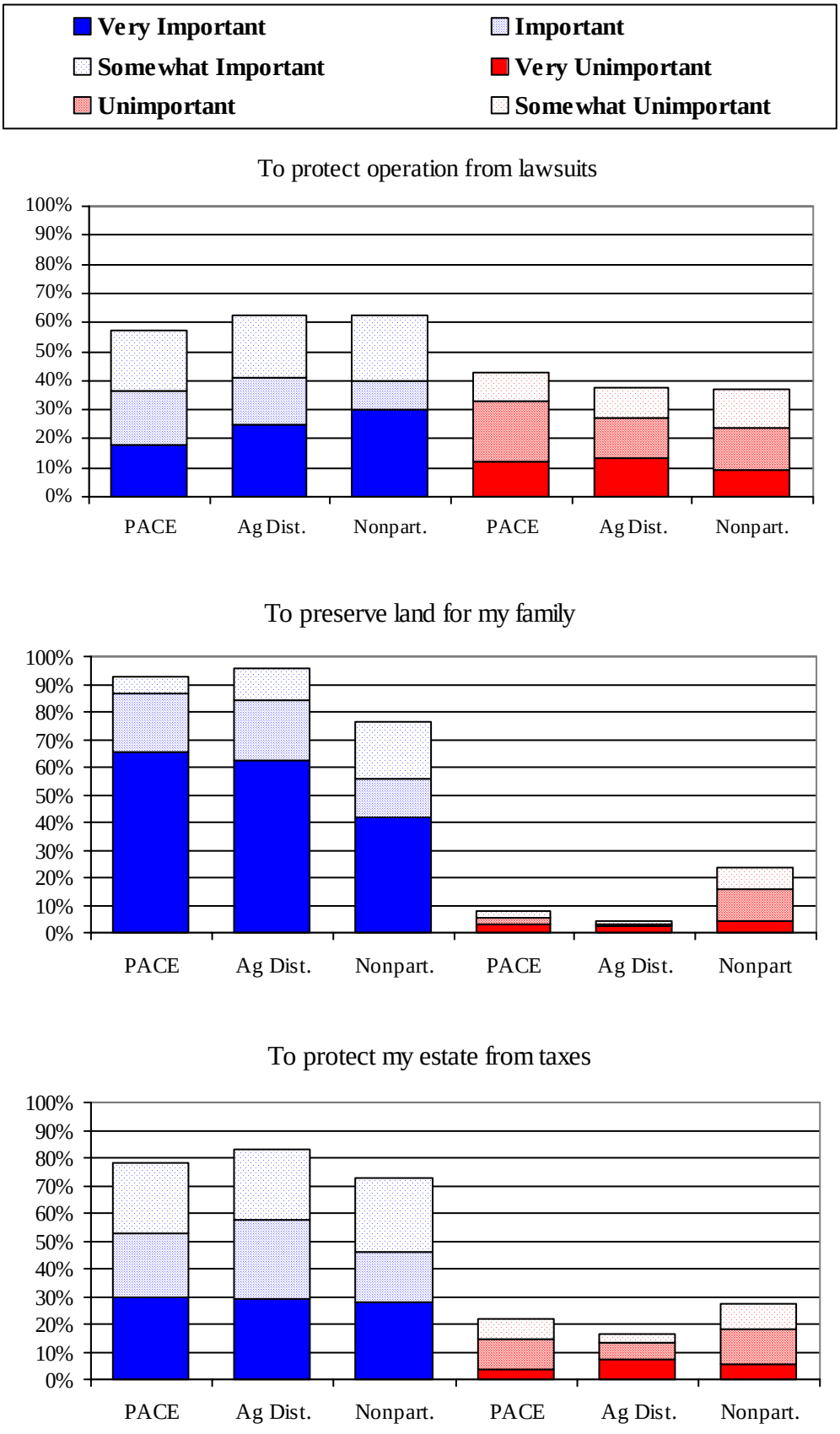


Figure 5.1a-c
Why Respondent Applied to (or Considered) Ag Dist Program

Views of PACE Program

As with *Ag Dist*, a series of questions asked why owners would consider or did apply to the *PACE* program. The three topic areas related to debt, retirement, and reinvestment.

The split for relieving debt shows two distinct groups—one that feels it is important and one that does not. The majority of *PACE* participants felt it was important, but 44 percent felt it was unimportant.

PACE participants were more motivated by debt relief to participate in the *PACE* program when compared to those in an *Ag Dist* (note: the question was asked as a hypothetical for *Ag Dist* participants).

A majority of participants thought retirement security and reinvestment were important in making the *PACE* enrollment decision. However, the only reason most nonparticipants would be interested in *PACE* is retirement security. Indeed, all three groups had a mostly balanced view of using *PACE* for retirement.

PACE and *Ag Dist* participants were far more likely than nonparticipants to be interested in reinvestment.

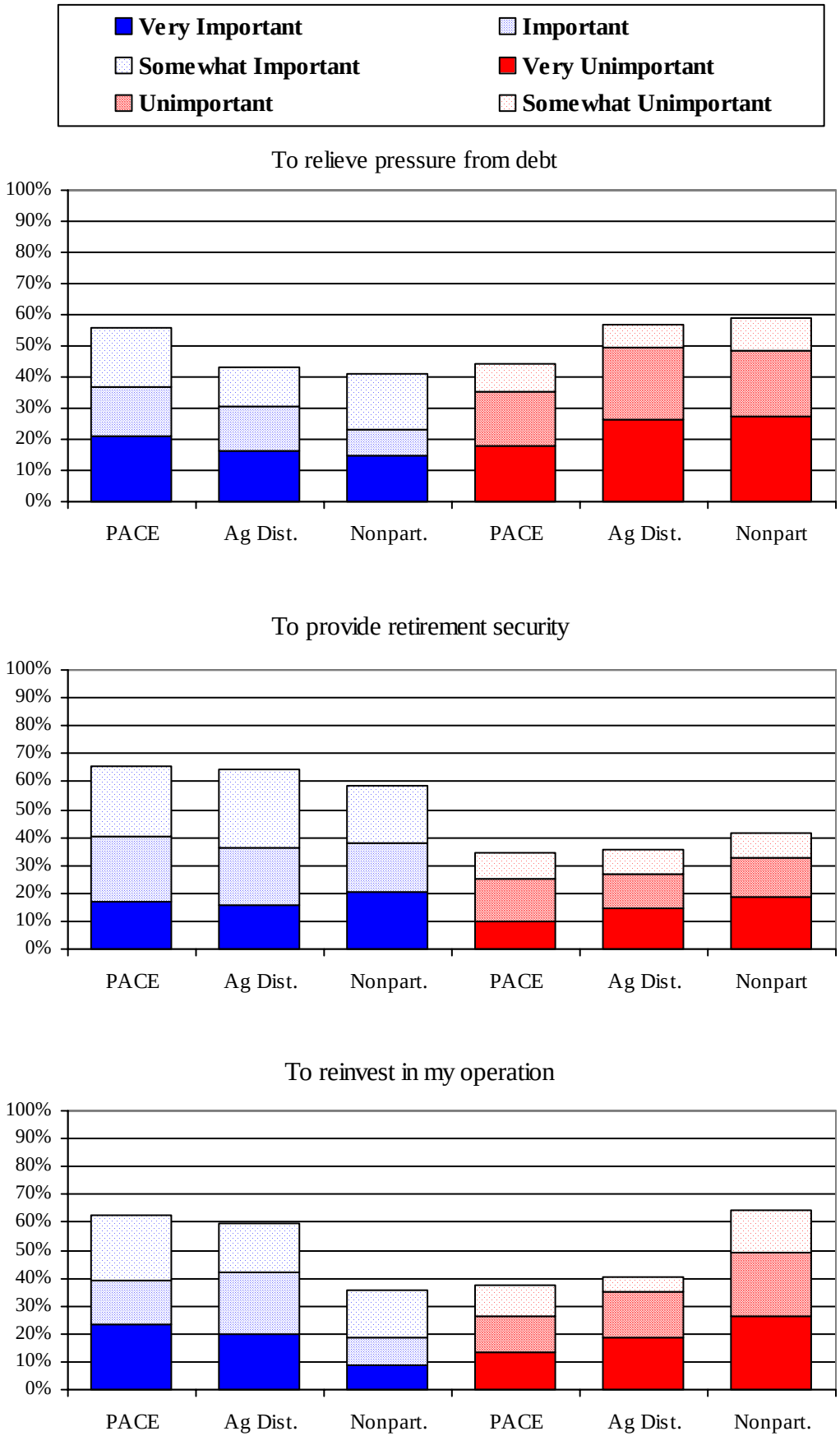


Figure 5.2a-c
Why Respondent Applied to (or Considered) PACE Program

Strategies in PACE Offers

This subsection addresses only those owners that submitted offers to the *PACE* program, i.e., all *PACE* participants and some *Ag Dist* participants. Nonparticipants were not asked these questions and *Ag Dist* participants who did not apply to the *PACE* program are excluded.

Overall, 47.1 percent of *Ag Dist* participants have tried unsuccessfully to enroll in *PACE*. Table 5.2 also shows that 25.9 percent of *PACE* participants had been unsuccessful in applying for *PACE* prior to their bid being accepted. The other 74.1 percent of *PACE* participants were successful in their first attempt to enroll in *PACE*.

For the unsuccessful *Ag Dist* participants and initially unsuccessful *PACE* participants, three additional questions were asked to understand what the owners were thinking when they made their offers. Figures 5.3a-c on the next page present these results.

Large majorities of both groups of unsuccessful enrollees believed that if their offer was not accepted, then they would simply apply again in the future. This is an important result because future funding of *DALP* has been more uncertain than many owners might have (at least, initially) perceived.

Majorities of both groups also acknowledged that there was an element of gambling in their bid. Since there is very little information about the easement market available to owners, it is not surprising that over 60 percent concede that they "took a chance" when faced with uncertainty.

More surprising, perhaps, is that a majority of the *PACE* participants who initially had bids rejected, reported that they had little information about what an acceptable bid should be. Yet, only a minority of *Ag Dist* participants agreed with this statement. This may suggest that the *Ag Dist* group is better informed and is willing to wait for a higher payment.

Table 5.2
Unsuccessful PACE Offers

		Yes	No
Did you try, unsuccessfully, to enroll any Easement (PDR) Program parcels in a previous cycle (for example, did you submit an offer that was not selected?	PACE	25.9%	74.1%
	Ag. District	47.1%	52.9%

Note: Nonparticipants were not asked.

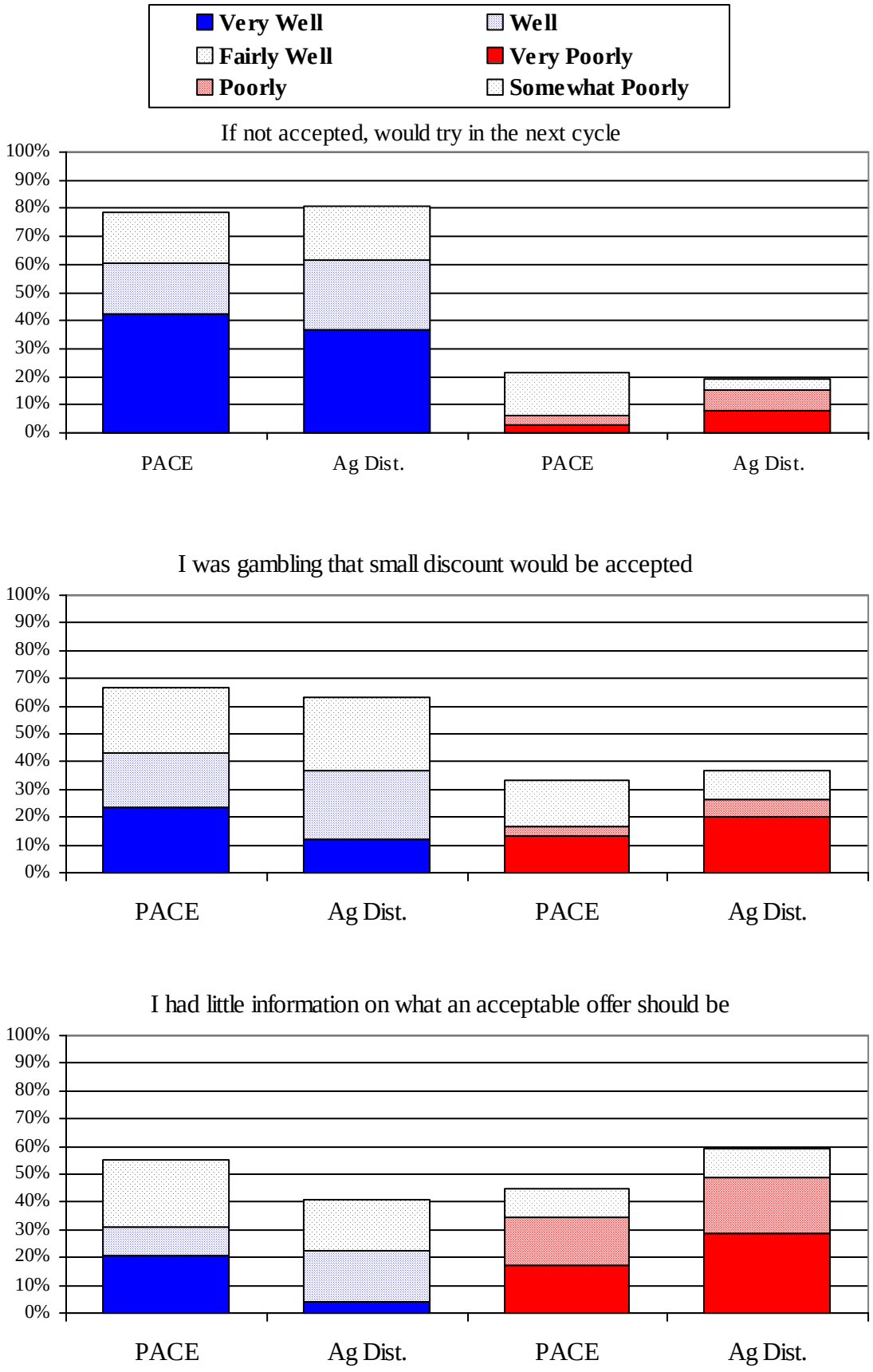


Figure 5.3a-c
Why Respondent Believes PACE Offer Was Not Accepted

Participant Satisfaction

Participants were asked about their satisfaction with various aspects of their interactions with *DALP* staff. Contacts with office staff are evaluated in Figure 5.4 and overall impressions about the *PACE* Program are presented in Figures 5.5a-c.

There was very high satisfaction for *PACE* participants. The highest marks were given for contacts with office staff, where over 95 percent indicated satisfaction and 52.8 percent were very satisfied. Though still expressing high levels of satisfaction, the lowest marks were given for the length of time it took to complete the process. Still, slightly over 80 percent expressed satisfaction (18.3 percent Very Satisfied and 42.3 percent Satisfied). The overall experience with the outcome and the process was very positive. For every question, less than 20 percent of *PACE* participants expressed dissatisfaction.

There was only a little less satisfaction with the program experience for the *Ag Dist* participants, and most participants were satisfied with their experiences. Over 90 percent expressed satisfaction with office contacts (31.9 percent Very Satisfied and 49.6 percent Satisfied).

Ag Dist participants expressed higher satisfaction with the process length than *PACE* participants. Approximately 80 percent were satisfied with the overall experience of the process (59.0 percent Very Satisfied and Satisfied). However, this group had much lower satisfaction with the outcome of the process. In this case, just over half expressed satisfaction with the outcome (15.1 percent Very Satisfied and 25.2 percent Satisfied). This may reflect a disconnect between their expectations of what the *Ag Dist* program could deliver and their actual experience, or it may simply be that some did not get their *PACE* offers accepted.

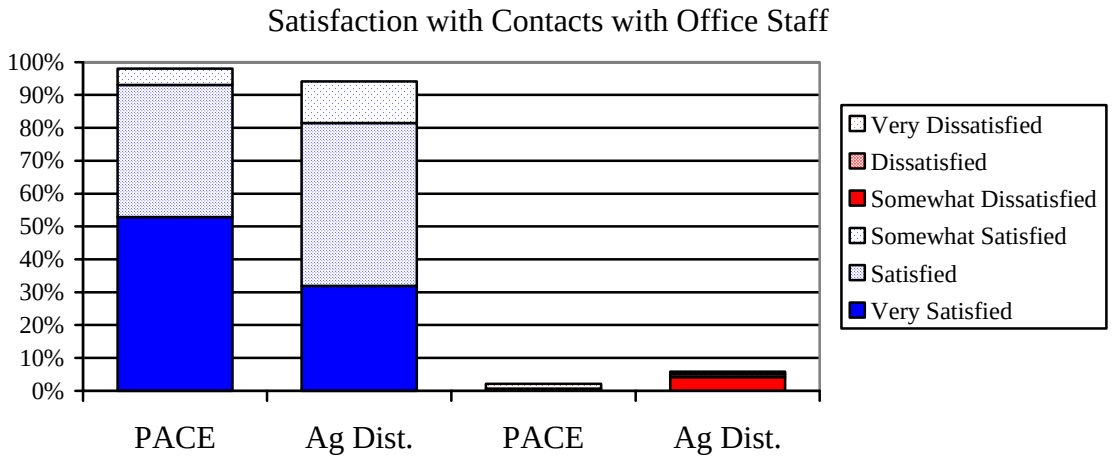
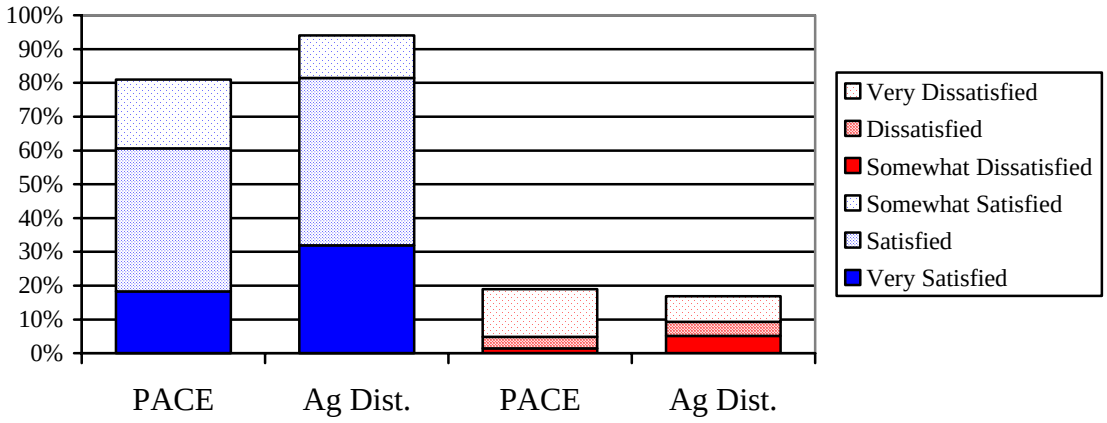
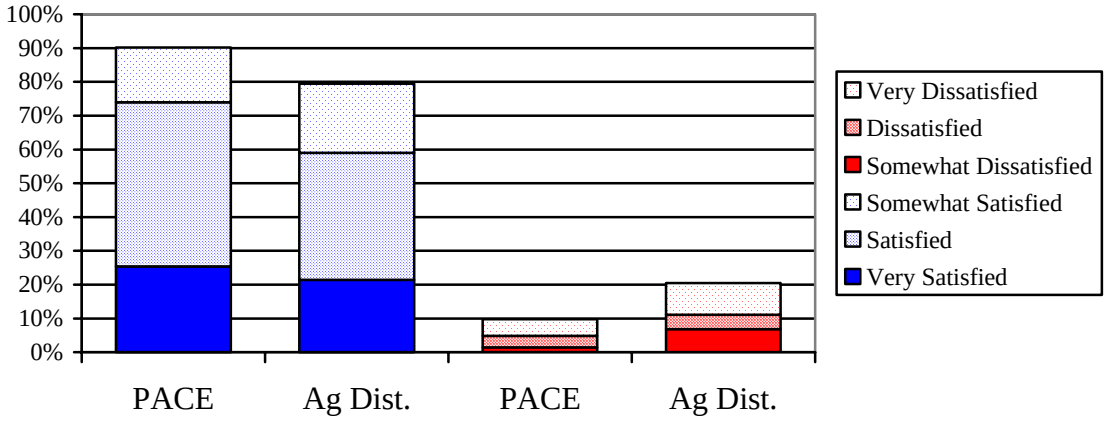


Figure 5.4
Participant Satisfaction with Office Staff

Satisfaction with the length of time to complete the process



Satisfaction with your overall experience with the process



Satisfaction with your overall experience with the outcome

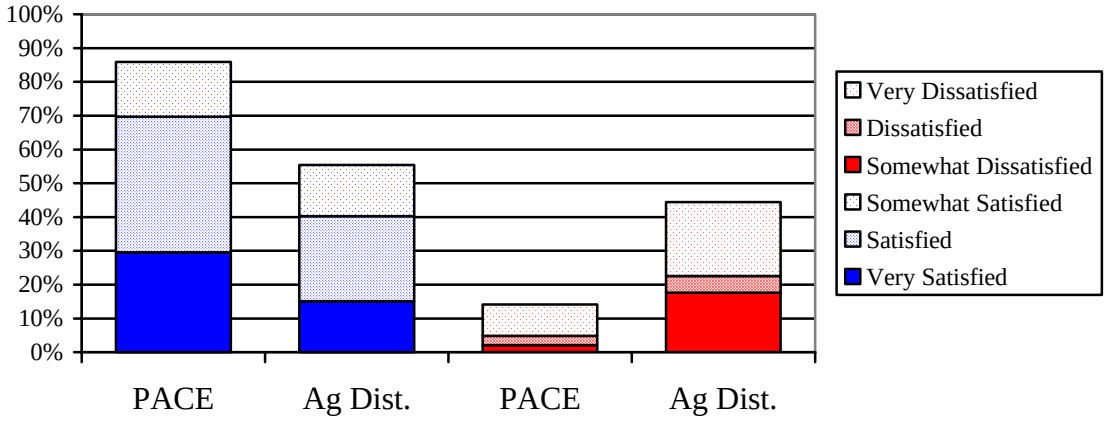


Figure 5.5a-c
Participant Satisfaction

Would They Participate Again?

There were considerable differences between *PACE* and *Ag Dist* participants in whether they would participate again in the programs—this question was asked in a hypothetical sense: *if you had to do it over again, would you…*

Figures 5.6a-b show the results. It is important to note that for the *Ag Dist* participants, participation in the *PACE* program was asked as a hypothetical about a future application.

The vast majority of participants indicated that they would participant in the *Ag Dist* program again (90 percent for *PACE* and 71 percent for *Ag Dist*). Furthermore, over half of the *PACE* participants indicated they were very likely to participate again. These findings provide evidence of strong endorsement of the *Ag Dist* program.

Over half of the *PACE* participants indicated it was "Very Likely" they would have participated in the *Ag Dist* program again (55.9%) versus a third of the *Ag Dist* participants (34.1%). A similar contrast was found for the likelihood of participating in the *PACE* Program, with over half of the *PACE* participants indicating they would participate again (53.2%) and one third of *Ag Dist* participants intending to apply. Among *Ag Dist* participants, 28.3 percent felt it was "Very Unlikely" that they would apply to *PACE*.

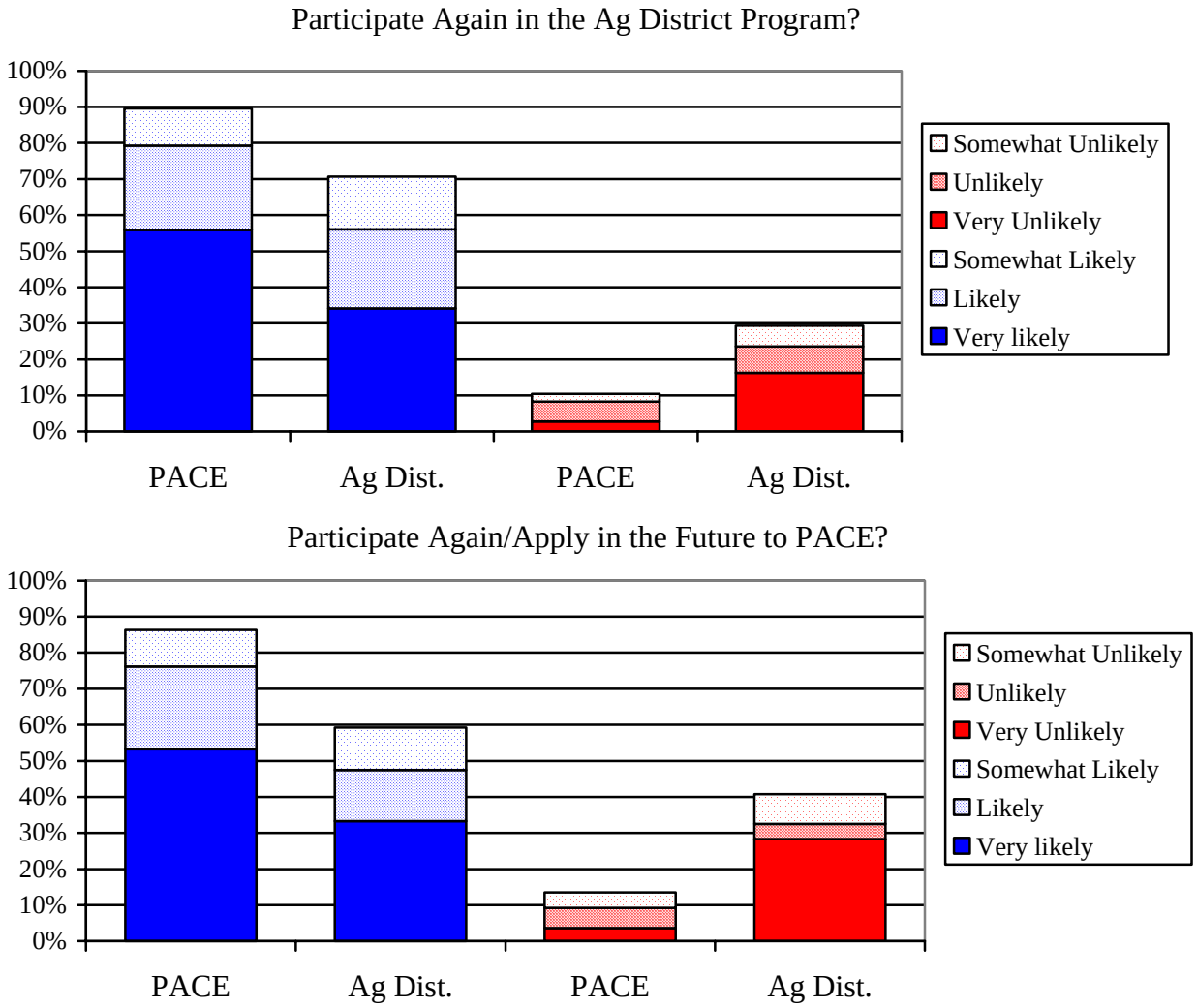


Figure 5.6a-b
Would Respondent Participate Again?

6. The Money Trail

The *PACE* participants were asked how they used their easement money and their opinions about the money. These perspectives are important because one rationale for the *DALP* program is that it injects capital into agricultural and rural economies. The results are also interesting because the *PACE* participants' use of the money may indirectly indicate owners' perspectives on the agricultural economy. Or, owners that invest may be in a better financial position than owners that pay off debts.

Uses of Money

Options offered included investments in their current operation and in stocks/mutual funds. Table 6.1 presents the results in terms of the categories on the survey, where respondents could choose one or more categories.

Figure 6.1 offers a graphical perspective of what percent of the respondents had at least one of the answers presented in Table 6.1. In addition, the category "Overall Farm" represents the percent of respondents that selected at least one use that involves investment in their farm operation.

The majority of the respondents (54.2%) indicated that they invested the funds in stocks and mutual funds. This was the single largest answer. However, if we look across (in Figure 6.1) several of the answers that relate to the farm operation—hired more employees; purchased another parcel to farm; established conservation practices; purchased farm machinery; decreased mortgage debt; and decreased debt from operational loss—65.3 percent of the participants invested part of their payment back into their farm operation.

Table 6.1
Uses of PACE Money

Use of Money	Percent Reporting Use
Savings, CD, Mutual funds, Stocks, etc.	54.2%
Decreased mortgage debt	33.3%
Decreased debt from operational loans	18.8%
Purchased another parcel to farm	15.3%
Purchased farm machinery or equipment	15.3%
Established conservation practices	13.2%
Used for educational purposes	3.5%
Started or purchased a non-farm business	1.4%
Hired more employees	0.0%
Other	4.7%

Note: Only *PACE* participants were asked. Totals do not sum to one because multiple responses were allowed

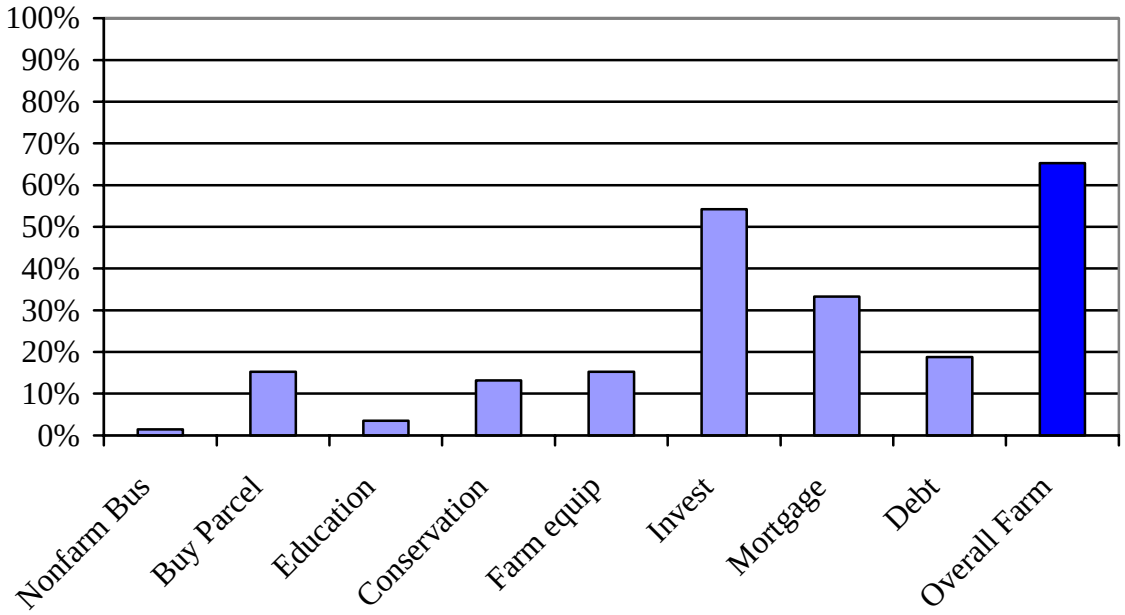


Figure 6.1
PACE Money Trail

Perspectives on PACE Money

Ag Dist and *PACE* participants were asked their opinions about the importance of *PACE* funding. *PACE* participants were asked whether they agreed that funding provided was critical to their operation. *Ag Dist* participants were asked if they thought the funding would be critical to their operation.

The results were similar for both groups. A slim majority of both groups believed that the funding was critical to improving the financial viability of their operation. This may indicate a split with each set of participants—those in strong and those in less strong financial positions.

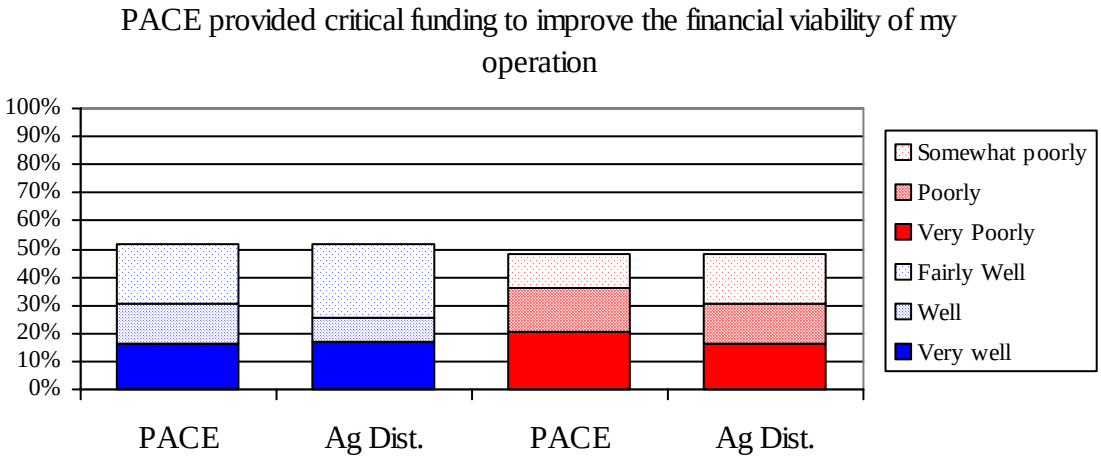


Figure 6.2
Opinion of PACE Funds

7. Summary

This report presents the results of a survey of Delaware agricultural landowners about their characteristics and their opinions about participation in the Delaware Agricultural Lands Preservation Program, specifically the *PACE* and *Ag Dist* programs.

The survey had extensive coverage for the population of participants; 273 respondents with a 75.6 percent response rate. The survey targeted a sample of nonparticipants, a population that is unknown. The nonparticipant sample had a good response rate, 50.8 percent.

The results demonstrate several participation patterns of participants relative to nonparticipants:

- Participants tend to own larger farms
- Many participants "diversify" by enrolling only some of their parcels
- Participants were more likely to raise corn, soybeans, and vegetables
- Participants had roughly the same rate of animal agriculture
- Participants tended to have more decision-makers
- Participants were much more likely to be full-time operators
- Participants and nonparticipants were roughly as likely to be retired
- Participants had more sources of value for owning and working on farmland
- Participants were more likely to value working outdoors
- Participants were more likely to value ownership to pass land onto children

The results also offered insight into Delaware landowners' knowledge of the *DALP* program:

- Word of mouth is the most common way owners learn about the program
- The internet, as a way to learn about the program, does not seem to be reaching nonparticipants

Owners provided their views on the *DALP* program:

- Participants and nonparticipants identified preserving land for family as the most attractive aspect of the *Ag Dist*
- Both groups also valued the *Ag Dist* for its protection against agricultural nuisance suits and taxes
- A majority of *PACE* participants found that program attractive to relieve pressure from debt, to provide retirement security, and to reinvest in their operations
- A minority of *Ag Dist* participants and nonparticipants were interested in *PACE* to relieve pressure from debt
- 47.1 percent of *Ag Dist* participants have applied unsuccessfully to the *PACE* program
- Unlike *Ag Dist* participants, a majority of *PACE* participants that initially submitted unsuccessful bids to the *PACE* program were uncertain about their bids

Participants offered opinions about their experience with the *DALP* process:

- Large majorities were satisfied with the *DALP* staff
- Large majorities of *PACE* participants were satisfied with the *DALP* procedures and outcomes
- A large majority of *Ag Dist* participants were satisfied with *DALP* procedures, but a small majority was satisfied with the outcome of the *DALP* process
- A large majority of participants would participate in *Ag Dist* if they had the chance to do it again
- Smaller majorities of participants would participate in *PACE* if they had the chance to do it again
- Most *PACE* participants are using *PACE* money for investments
- Some *PACE* participants are using *PACE* money to pay debts
- Approximately half of both groups of participants believe *PACE*

provides/would provide critical funding for their operations.

Overall, we conclude that participants are more likely to be owner-operators and to reflect a traditional land/family farming ethic. Future marketing of the preservation programs may have to entice owners that are less likely to fit this model.

8. Works Cited

Delaware Department of Agriculture. (2003). "Farmland Preservation in Delaware." Website: http://www.state.de.us/deptagri/aglands/lndpres.htm (Last accessed May 29, 2003).

Dillman, D.A. (2000). *Mail and Internet Surveys: The Tailored Design Method*. New York: J Wiley.

Duke, Joshua M. 2004. Participation in agricultural land preservation programs: Parcel quality and a complex policy environment. *Agricultural and Resource Economics Review* 33(1):34-49.

Duke, Joshua M. and Thomas W. Ilvento. 2004. A conjoint analysis of public preferences for agricultural land preservation. *Agricultural and Resource Economics Review* 33(2):209-219.

Duke, Joshua M. and Rhonda Aull-Hyde. 2002. Identifying public preferences for land preservation using the analytic hierarchy process. *Ecological Economics* 42(1-2):131-145.

Duke, Joshua M., Thomas W. Ilvento, and Rhonda A. Hyde. 2002. Public support for land preservation: Measuring relative preferences in Delaware. *Dept. of Food and Res. Econ. Research Report* RR02-01, Univ. of Del.

Appendix 1
Survey Instrument for *PACE* Participants

LAND PRESERVATION SURVEY

FOR EASEMENT (PDR) PROGRAM PARTICIPANTS

A University of Delaware Study

Sponsored by
United States Department of Agriculture, National Research Initiative

With the Cooperation of
Delaware Agricultural Lands Preservation Foundation
Delaware Department of Agriculture

State records list you as the owner of one or more land parcels that are enrolled in Delaware's PURCHASE OF DEVELOPMENT RIGHTS (PDR) PROGRAM, which is also known as the EASEMENT (PDR) PROGRAM. The parcels had previously been enrolled in the AGRICULTURAL DISTRICT PROGRAM. Please answer the questions on this survey for your **HOUSEHOLD** about your decision to enroll these parcels.

From our review of State records, we have listed below what we believe are the parcels or sets of parcels you or your members of your household have ENROLLED in the EASEMENT (PDR) PROGRAM.

EASEMENT (PDR) PROGRAM District where Parcels are ENROLLED	Location of Parcels	Acres	Date ENROLLED
Parcel Description	*Parcel Location*	*# acres*	*2/21/2003*

GT GU GV GW

1. Is our information correct?

YES 90.1% AA1 NO 9.9% AA0 → If no, please cross out and correct any errors.

2. Were you involved in the decision to enroll the parcels in the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM?

YES 98.6% AB1 NO 1.4% AB0 → If no, please pass the survey on to person involved.

3. Have you sold any of the parcels enrolled in the EASEMENT (PDR) PROGRAM?

YES 5.0% AC1 AC1 NO 95.0% AC0 AC0 → If yes, please check the parcels above that have been sold. AG

Satisfaction and Decision Making

These questions ask about your satisfaction with the experience of enrolling your parcels.

4. How did you learn about the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM? (Please check all that apply)

Brochures	9.5% AM1	The Internet	9.5% AN1	Other farmers	54.4% AO1
Personal contacts with Program staff	43.5% AP1	News reports	31.3% AQ1	Other _____	2.2% AR

5. Why did you decide to apply to the AGRICULTURAL DISTRICT PROGRAM? For each statement, please indicate a level of importance to you when deciding to apply to the AGRICULTURAL DISTRICT PROGRAM.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To preserve land for my family	65.5% AW1	21.0% AW2	6.3% AW3	2.1% AW4	2.8% AW5	2.8% AW6
To protect my estate from taxes	29.5% AX1	23.3% AX2	25.6% AX3	7.0% AX4	10.9% AX5	3.9% AX6
To protect my operation from lawsuits by residential neighbors	17.7% AY1	18.5% AY2	21.0% AY3	9.7% AY4	21.0% AY5	12.1% AY6

6. Please indicate a level of importance to you when deciding to apply to the EASEMENT (PDR) PROGRAM.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To relieve pressure from debt	20.9% AZ1	15.7% AZ2	19.4% AZ3	9.0% AZ4	17.2% AZ5	17.9% AZ6
To provide retirement security	17.2% BA1	23.1% BA2	25.4% BA3	9.0% BA4	15.7% BA5	9.7% BA6
To re-invest in my operation	23.4% BB1	15.6% BB2	23.4% BB3	10.9% BB4	13.3% BB5	13.3% BB6

7. Did you try unsuccessfully to enroll any EASEMENT (PDR) PROGRAM parcels in a previous cycle (for example, did you submit offer that was not selected)?

YES 25.9% CS1 | NO 74.1% CS0 → If no, please go to question 8 on the next page

If you answered "yes", what reasons best describe why you did not ultimately enroll? Please indicate how well the following statements describe your situation in that previous cycle.

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
I felt that if my small discount was not accepted, I could try in the next cycle	42.4% CU1	18.2% CU2	18.2% CU3	15.2% CU4	3.0% CU5	3.0% CU6
I entered a small discount because I was gambling that it would be accepted	23.3% CV1	20.0% CV2	23.3% CV3	16.7% CV4	3.3% CV5	13.3% CV6
I entered a small discount because I had little information on what a successful offer should be	20.7% CW1	10.3% CW2	24.1% CW3	10.3% CW4	17.2% CW5	17.2% CW6

8. Please describe how satisfied you were with different aspects of your participation in the EASEMENT (PDR) PROGRAM.

	Very Satisfied	Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Dissatisfied	Very Dissatisfied
Contacts with office staff	52.8% AS1	40.3% AS2	4.9% AS3	1.4% AS4	0% AS5	0.7% AS6
The length of time it took to complete the process	18.3% AT1	42.3% AT2	20.4% AT3	14.1% AT4	3.5% AT5	1.4% AT6
Your overall experience with the process	25.4% AU1	48.6% AU2	16.2% AU3	4.9% AU4	3.5% AU5	1.4% AU6
Your overall experience with the outcome	29.6% AV1	40.1% AV2	16.2% AV3	9.2% AV4	2.8% AV5	2.1% AV6

9. After receiving the easement money, what did you do with it? (Please check all that apply.)

Started or purchased a non-farm business	1.4% GF1	Purchased farm machinery or equipment	15.3% GK1
Hired more employees	0% GG1	Savings, CD, Mutual funds, Stocks, etc.	54.2% GL1
Purchased another parcel to farm	15.3% GH1	Decreased mortgage debt	33.3% GM1
Used for educational purposes	3.5% GI1	Decreased debt from operational loans	18.8% GN1
Established conservation practices	13.2% GJ1	Other: _____	4.7% GQ1

10. Based on your experience and if you had to do it over again, how likely would you be to participate again in the:

	Very Likely	Likely	Somewhat Likely	Somewhat Unlikely	Unlikely	Very Unlikely
AGRICULTURAL DISTRICT PROGRAM?	55.9% BQ1	23.4% BQ2	10.3% BQ3	2.1% BQ4	5.5% BQ5	2.8% BQ6
EASEMENT (PDR) PROGRAM?	53.2% BR1	23.0% BR2	10.1% BR3	4.3% BR4	5.6% BR5	3.6% BR6

11. Please answer these questions about the parcels enrolled in the EASEMENT (PDR) PROGRAM.

Before you enrolled, had developers approached you with an offer to buy a parcel that you would later enroll?	YES 35.2% BC1	NO 64.8% BC0
After you enrolled, had developers approached you with an offer to buy an enrolled parcel?	YES 19.2% BD1	NO 80.8% BD0
Before you enrolled, had developers paid you for a right of first refusal on your enrolled parcel?	YES 1.4% BE1	NO 98.6% BE0

12. How well do the following statements reflect your motivation to enroll in the EASEMENT (PDR) PROGRAM and the AGRICULTURAL DISTRICT PROGRAM? (Please check one box for each statement.)

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
By enrolling as an AGRICULTURAL DISTRICT, I was mainly interested in the possibility of selling my easement (development rights)	28.6% CA1	24.3% CA2	22.9% CA3	8.6% CA4	9.3% CA5	6.4% CA6
In the area near my enrolled parcels, farmers earn a lot more money by selling their land for development	46.1% CB1	17.0% CB2	18.4% CB3	9.9% CB4	5.7% CB5	2.8% CB6
At the time of enrollment in the AGRICULTURAL DISTRICT PROGRAM, my parcels were highly threatened by development pressures	13.2% CC1	10.4% CC2	23.6% CC3	26.4% CC4	13.9% CC5	12.5% CC6
Before enrolling in these programs, I intended to sell my farm for development	0.7% CD1	3.6% CD2	2.9% CD3	12.1% CD4	19.3% CD5	61.4% CD6
The EASEMENT (PDR) PROGRAM provided critical funding to improve the financial viability of my operation	16.3% CF1	14.2% CF2	21.3% CF3	12.1% CF4	15.6% CF5	20.6% CF6
In the year I entered the EASEMENT (PDR) PROGRAM, I offered a large discount on the appraised value of my easement (development rights)	36.0% CG1	30.1% CG2	16.9% CG3	6.6% CG4	0.7% CG5	9.6% CG6
I offered a large discount because I had no immediate plans for development	23.2% CH1	26.8% CH2	19.6% CH3	6.5% CH4	5.1% CH5	18.8% CH6
I was more interested in the total compensation received for my easement (development rights) than the discount	28.2% CI1	23.9% CI2	26.1% CI3	9.2% CI4	5.6% CI5	7.0% CI6
In the year I entered the EASEMENT (PDR) PROGRAM, I was very uncertain when selecting the discount	20.7% CJ1	23.6% CJ2	31.4% CJ3	8.6% CJ4	5.0% CJ5	10.7% CJ6
It was more important to me that my offer was successful than worrying about the discount	19.6% CK1	25.4% CK2	29.7% CK3	11.6% CK4	5.1% CK5	8.7% CK6
The final compensation for my easement (development rights) was fair	17.9% CL1	22.9% CL2	34.3% CL3	13.6% CL4	6.4% CL5	5.0% CL6
I was not interested in selling or developing my parcels; I enrolled in the EASEMENT (PDR) PROGRAM strictly for the financial assistance	18.9% CM1	23.8% CM2	21.7% CM3	14.0% CM4	6.3% CM5	15.4% CM6
I would have eventually converted my parcels to a nonagricultural use, and the EASEMENT (PDR) PROGRAM is the only thing that stopped me	4.2% CN1	7.0% CN2	9.9% CN3	18.3% CN4	17.6% CN5	43.0% CN6

PARCELS NOT ENROLLED AND AGRICULTURAL MANAGEMENT

Some farming households may NOT ENROLL all of the agricultural land parcels they own. The following questions ask about your parcels NOT ENROLLED in the AGRICULTURAL DISTRICT PROGRAM or the EASEMENT (PDR) PROGRAM.

13. Are all of the parcels of farmland that your household owns ENROLLED in the AGRICULTURAL DISTRICT PROGRAM or the EASEMENT (PDR) PROGRAM?

If yes, go to question 14 and please ignore all other questions about parcels NOT ENROLLED

YES	NO
62.0% DA1	38.0% DA0

How many **acres** of agricultural land does your household own that are NOT ENROLLED? 388.2 X

Have any of these acres been in the Farmland Assessment Program in the past 10 years? *Farmland Assessment is the program that reduces property taxes on cropland.*

YES	NO
39.6% DC1	60.4% DC0

Were the parcels eligible for the AGRICULTURAL DISTRICT PROGRAM?

YES	NO	Don't Know
64.2% DD1	3.8% DD0	32.1% DDdk

How well do the following statements describe your reasons not to enroll in the AGRICULTURAL DISTRICT PROGRAM?

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
I plan to sell the parcels and enrollment would keep me from getting the highest price possible	18.8% DQ1	6.3% DQ2	25.0% DQ3	8.3% DQ4	16.7% DQ5	25.0% DQ6
I am hedging by enrolling some parcels and not others	14.3% DU1	8.2% DU2	28.6% DU3	10.2% DU4	12.2% DU5	26.5% DU6
I plan to develop the parcels NOT ENROLLED	4.1% DV1	8.2% DV2	26.5% DV3	12.2% DV4	16.3% DV5	32.7% DV6

14. Please indicate the types of agricultural activities on your parcels ENROLLED and parcels NOT ENROLLED. (Please check all that apply.)

	ENROLLED	NOT ENROLLED (if applicable)		ENROLLED	NOT ENROLLED (if applicable)
Poultry	12.6% EB1	7.7% EN1	Corn	86.7% EF1	74.4% ER1
Dairy	7.4% EC1	10.3% EO1	Soybeans	88.8% EG1	71.8% ES1
Hogs	0.7% ED1	5.1% EP1	Vegetables	21.5% EH1	28.2% ET1
Other Livestock	8.9% EE1	10.3% EQ1	Other Crops	52.6% EI1	43.6% EU1

15. Do you lease or farm your parcels?

	ENROLLED	NOT ENROLLED (if applicable)
I farm them	45.3% EY1	51.2% FB1
I lease them	59.0% EZ1	46.5% FC1
Other	0% FA	9.3% FD

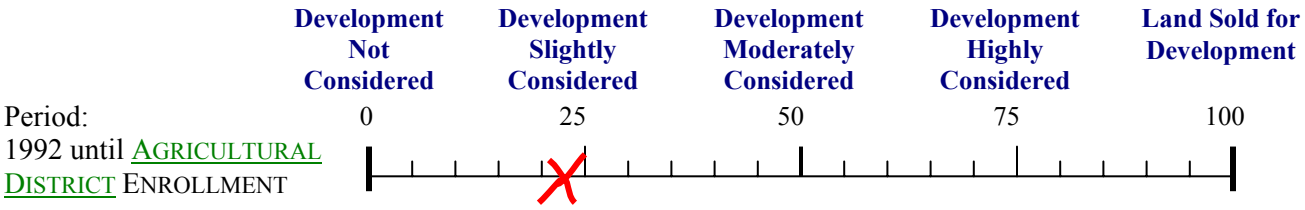
LAND PREFERENCES

The remaining questions have been designed to use statistical methods to reveal the underlying effectiveness of Delaware's farmland preservation programs.

For this page, please reflect on how your household thought about developing your agricultural land **in the past**. We know that landowners either sell their land for development or they don't. But some landowners come **closer** to developing than others. This may depend on their household's preferences, their financial position, and any unexpected family events.

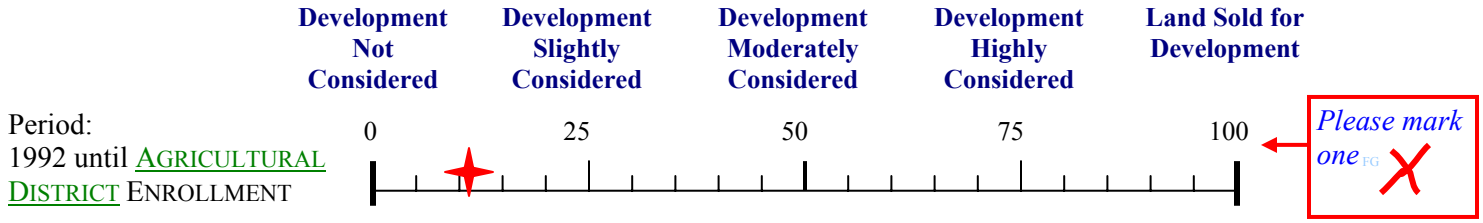
Example

Consider a landowner that enrolled in the AGRICULTURAL DISTRICT PROGRAM in 1997. This owner may have felt that he or she considered development briefly in 1994, but not very seriously. On a scale of 0 to 100, this landowner may have felt that the number "23" best represents the maximum consideration given to development. This landowner would then mark the scale:



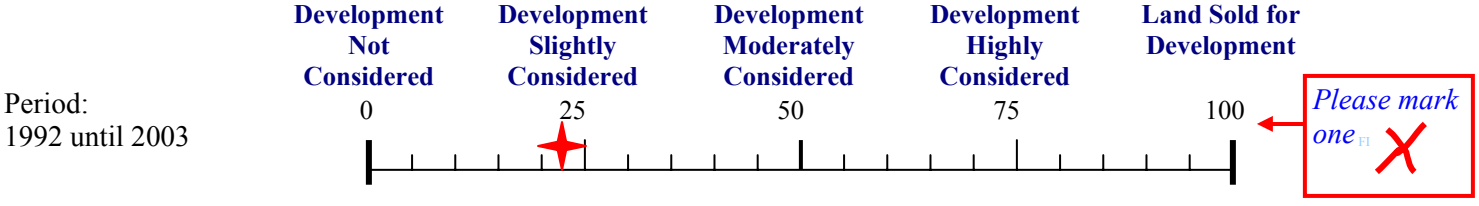
16. How close did your household come to selling any of your parcels ENROLLED for development between 1992 and the time of first entering the AGRICULTURAL DISTRICT PROGRAM?

*Please mark the **highest level of consideration** given to selling your land at prevailing market prices for developed land.*

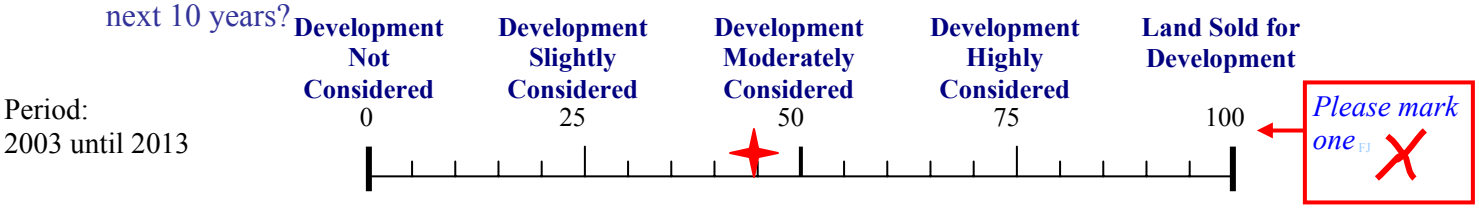


17. If you have parcels NOT ENROLLED, please answer the next two parts. Otherwise, go to the next page.

How close did your household come to selling any of the parcels NOT ENROLLED for development between 1992 and 2003?



How close do you think your household will come to selling any of the parcels NOT ENROLLED in the next 10 years?



These last questions are about how you and members of your household feel about owning agricultural land. Also, for those who actively farm, we are interested in your feelings about farming as a job.

18. How much do you think your land is worth per acre? Please answer for parcels ENROLLED in the EASEMENT (PDR) PROGRAM and, if applicable, those NOT ENROLLED. Please restrict your estimate to the average **MARKET** value for all **NATURAL** lands (cropland, forestland, and wetlands) and **EXCLUDE** developed lands (residences, agricultural buildings, etc.).

Market Price (per acre)	ENROLLED	NOT ENROLLED (if applicable)
$500 - $1,500	6.0% GN	2.0% GO
$1,500 - $3,000	33.6%	12.2%
$3,000 - $4,500	24.6%	22.4%
$4,500 - $6,000	14.2%	10.2%
$6,000 - $7,500	6.7%	12.2%
$7,500 - $10,000	3.0%	4.1%
$10,000 - $15,000	3.0%	8.2%
$15,000 - $22,500	1.5%	6.1%
$22,500 - $35,000	5.2%	8.2%
$35,000 +	2.2%	14.3%

19. Including you, how many **HOUSEHOULD MEMBERS** (over 18) help make important operational or ownership decisions regarding the parcels (both ENROLLED and NOT ENROLLED)? 2.15 (avg) BS

20. How many of the **HOUSEHOULD MEMBERS** in question 19 fit each of the following classifications? (Please write a number in the appropriate boxes.) (Response is the average response)

Full-time operator	0.69 BT1	Retired	0.41 BW1
Part-time operator, working mainly on the farm	0.52 BU1	Not operators	0.56 BX1
Part-time operator, working mainly off the farm	0.25 BV1	Other: _____	0.04 BY

21. How many **TOTAL HOURS** in a typical **WEEK** do these people work at **FARMING** and managing the agricultural land parcels **OWNED** by the household? 39.09 BZ

22. Apart from the money earned, what is it that farming members of your household **VALUE** about **WORKING** on the farm? (Please check all boxes that apply.)

Raising crops and animals	58.6% FK1	Working outdoors	72.1% FL1	Working with family	51.4% FM1
Being your own boss	64.0% FN1	Working with nature	61.3% FO1	Other _____	3.8% FP

23. Apart from the income it provides, what is it that your household **VALUES** about **OWNING** land? (Please check all boxes that apply.)

Connection to family heritage	60.9% FQ1	Passing land on to children	71.9% FR1	Connection to nature	58.3% FS1
Stewardship of own land	67.6% FT1	Control over land use options	59.7% FU1	Other _____	2.3% FV

24. Please consider a hypothetical exercise. We are going to ask you how much more income your household would need in order to give up the quality-of-life benefits associated with **WORKING** on and **OWNING** a farm.

Non-Farming Job: Suppose for the hours of work in **QUESTION 21,** all decision makers in your household in **QUESTION 19** were offered Job X, which should be thought of as the best non-farming job for each person. Most things about Job X are the same as what you currently do:

You could live in the same house
You would work just as hard as you do now, but no harder
You would earn the same income for same hours of work

No Control: Suppose your household also was asked to give up control of your land with a 100-year lease of all farmland and machinery. This lease would pay you the same income you currently receive from your land and machinery, but without the control.

If your household accepts Job X and gives up control, you would no longer receive the things you value about **WORKING** on the farm in **QUESTION 22** and **OWNING** farmland in **QUESTION 23**.

Is there any amount of EXTRA income that someone could pay your household to accept this deal?

YES 30.6% FX1 | NO 69.4% FX0 → Thank you! Please place in the envelope and return.

How much EXTRA income EACH YEAR would your household need to switch to Job X and give up control? Remember that if you were to accept this hypothetical deal, you could no longer work on your farm or control its management. Please check one box at each payment level to indicate whether you'd accept the deal at each EXTRA-income level.

Please make one check at each level ✓

EXTRA payment each year	Would your Household accept JOB X?				
	Definitely Yes	Probably Yes	Unsure	Probably No	Definitely No
$0 FY	0%	0%	0%	2.9%	97.1%
$500 FZ	0%	0%	0%	0%	100%
$1,000 GA	0%	0%	0%	0%	100%
$3,000 GB	0%	0%	0%	3.1%	96.9%
$7,000 GC	0%	0%	3.0%	6.1%	90.9%
$15,000 GD	0%	0%	3.1%	12.5%	84.4%
$22,500 GE	0%	0%	9.4%	9.4%	81.4%
$35,000 GF	0%	3.1%	15.6%	6.3%	75.0%
$50,000 GG	12.5%	15.6%	6.3%	21.9%	43.8%
$100,000 GH	31.4%	37.1%	11.4%	11.4%	8.6%

If you answered "probably no" or "definitely no" to $100,000, what is the minimum payment your household would need to accept JOB X? $ 170,008 GI0

Thank you for completing this survey! Please feel free to write comments on the survey.

Please return to: Joshua M. Duke, Food and Resource Economics, University of Delaware, Newark DE 19716

Appendix 2
Survey Instrument for *Ag Dist* Participants

LAND PRESERVATION SURVEY

FOR AGRICULTURAL DISTRICT PROGRAM PARTICIPANTS

A University of Delaware Study

Sponsored by
United States Department of Agriculture, National Research Initiative

With the Cooperation of
Delaware Agricultural Lands Preservation Foundation
Delaware Department of Agriculture

State records list you and members of your household as the owners of one or more land parcels that are enrolled in Delaware's AGRICULTURAL DISTRICT PROGRAM. As you may know, owners of land parcels in the AGRICULTURAL DISTRICT PROGRAM are eligible to apply to the EASEMENT / PURCHASE OF DEVELOPMENT RIGHTS (PDR) PROGRAM.

Please answer the questions on this survey for your **HOUSEHOLD** regarding your decision-making about your agricultural land parcels.

From our review of State records, we have listed below what we believe are the parcels or sets of parcels that you or members of your household have ENROLLED in the AGRICULTURAL DISTRICT PROGRAM. Even if you have subsequently applied to or enrolled in the EASEMENT (PDR) PROGRAM, please answer this survey

AGRICULTURAL DISTRICT PROGRAM District where Parcels are ENROLLED	Location of Parcels	Acres	Date ENROLLED
Parcel Description	*Parcel Location*	*# acres*	*2/21/2003*
HD	HE	HF	HG

1. Is our information correct?

YES 91.7% AA1 NO 8.3% AA0 → If no, please cross out and correct any errors.

2. Were you involved in the decision to enroll the parcels in the AGRICULTURAL DISTRICT PROGRAM?

YES 99.2% AB1 NO 0.8% AB0 → If no, please pass the survey on to person involved.

3. Have you sold any of the parcels enrolled in the AGRICULTURAL DISTRICT PROGRAM?

YES 5.0% AC1 NO 95.0% AC0 → If yes, please check the parcels above that have been sold. AG

SATISFACTION AND DECISION MAKING

These questions ask about your satisfaction with the experience of enrolling your parcels.

4. How did you learn about the AGRICULTURAL DISTRICT PROGRAM? (Please check all that apply)

Brochures	16.8% AM1	The Internet	9.6% AN1	Other farmers	54.4% AO1
Personal contacts with Program staff	36.0% AP1	News reports	30.4% AQ1	Other _____	2.5% AR

5. Why did you decide to apply to the AGRICULTURAL DISTRICT PROGRAM? For each statement, please indicate a level of importance to you when deciding to apply to the AGRICULTURAL DISTRICT PROGRAM.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To preserve land for my family	62.4% AW1	21.6% AW2	12.0% AW3	0.8% AW4	0.8% AW5	2.4% AW6
To protect my estate from taxes	28.9% AX1	28.9% AX2	25.4% AX3	3.5% AX4	6.1% AX5	7.0% AX6
To protect my operation from lawsuits by residential neighbors	24.6% AY1	16.7% AY2	21.1% AY3	10.5% AY4	14.0% AY5	13.2% AY6

6. Please indicate a level of importance to you when considering whether you should apply to enroll in the EASEMENT (PDR) PROGRAM.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To relieve pressure from debt	16.2% AZ1	14.4% AZ2	12.6% AZ3	7.2% AZ4	23.4% AZ5	26.1% AZ6
To provide retirement security	15.5% BA1	20.7% BA2	28.4% BA3	8.6% BA4	12.1% BA5	14.7% BA6
To re-invest in my operation	19.8% BB1	22.5% BB2	17.1% BB3	5.4% BB4	16.2% BB5	18.9% BB6

7. Have you tried unsuccessfully to enroll in the EASEMENT (PDR) PROGRAM (for example, did you submit an offer that was not selected)?

YES 47.1% CS1 NO 52.9% CS0 → If no, please go to question 8 on the next page

If you answered "yes", how well do the following reasons describe why you did not ultimately enroll?
*Please note: A "**discount**" is the proportion of the appraised value of your easement (development rights), which you offer to give up in order to increase the chance that your offer is accepted.*

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
I felt that if my small discount was not accepted, I could try in the next cycle	36.5% CU1	25.0% CU2	19.2% CU3	3.8% CU4	7.7% CU5	7.7% CU6
I entered a small discount because I was gambling that it would be accepted	12.2% CV1	24.5% CV2	26.5% CV3	10.2% CV4	6.1% CV5	20.4% CV6
I entered a small discount because I had little information on what a successful offer should be	4.1% CW1	18.4% CW2	18.4% CW3	10.2% CW4	20.4% CW5	28.6% CW6

8. Please describe how satisfied you were with different aspects of your participation in the AGRICULTURAL DISTRICT PROGRAM and, if applicable, your application to the EASEMENT (PDR) PROGRAM.

	Very Satisfied	Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Dissatisfied	Very Dissatisfied
Contacts with office staff	31.9% AS1	49.6% AS2	12.6% AS3	0.8% AS4	0.8% AS5	4.2% AS6
The length of time it took to complete the process	17.8% AT1	44.9% AT2	20.3% AT3	7.6%% AT4	4.2% AT5	5.1% AT6
Your overall experience with the process	21.4% AU1	37.6% AU2	20.5% AU3	9.4% AU4	4.3% AU5	6.8% AU6
Your overall experience with the outcome	15.1% AV1	25.2% AV2	15.1% AV3	21.8% AV4	5.0% AV5	17.6% AV6

9. Based on your experience and if you had to do it over again, how likely would you be to participate again in the:

	Very Likely	Likely	Somewhat Likely	Somewhat Unlikely	Unlikely	Very Unlikely
AGRICULTURAL DISTRICT PROGRAM?	34.1% BQ1	22.0% BQ2	14.6% BQ3	5.7% BQ4	7.3% BQ5	16.3% BQ6

10. In the future, how likely are you to apply to the EASEMENT (PDR) PROGRAM?

My parcels are currently under consideration		Very Likely	Likely	Somewhat Likely	Somewhat Unlikely	Unlikely	Very Unlikely
"SEE VERY LIKELY"	OR	33.3% BR1	14.2% BR2	11.7% BR3	8.3% BR4	4.2% BR5	28.3% BR6

11. Please answer these questions about the parcels enrolled in the AGRICULTURAL DISTRICT PROGRAM.

Before you enrolled, had developers approached you with an offer to buy a parcel that you would later enroll?	YES 39.5% BC1	NO 60.5% BC0
After you enrolled, had developers approached you with an offer to buy an enrolled parcel?	YES 31.5% BD1	NO 68.5% BD0
Have developers paid you for a right of first refusal on an enrolled parcel?	YES 96.0% BE1	NO 4.0% BE0

12. How well do the following statements reflect your motivation to enroll in the AGRICULTURAL DISTRICT PROGRAM and to consider the EASEMENT (PDR) PROGRAM? (Please check one box for each statement.)

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
By enrolling as an AGRICULTURAL DISTRICT, I was mainly interested in the possibility of selling my easement (development rights)	17.6% CA1	22.7% CA2	31.9% CA3	5.9% CA4	8.4% CA5	13.4% CA6
In the area near my enrolled parcels, farmers earn a lot more money by selling their land for development	51.7% CB1	18.3% CB2	10.0% CB3	8.3% CB4	7.5% CB5	4.2% CB6
At the time of enrollment in the AGRICULTURAL DISTRICT PROGRAM, my parcels were highly threatened by development pressures	17.2% CC1	8.2% CC2	26.2% CC3	18.0% CC4	13.9% CC5	16.4% CC6
Before enrolling in the AGRICULTURAL DISTRICT PROGRAM, I intended to sell my farm for development	1.7% CD1	1.7% CD2	9.1% CD3	12.4% CD4	14.9% CD5	60.3% CD6
I enrolled in the AGRICULTURAL DISTRICT PROGRAM mainly to avoid the transfer tax	5.0% CE1	11.8% CE2	9.2% CE3	19.3% CE4	11.8% CE5	42.9% CE6
I plan to withdraw from the AGRICULTURAL DISTRICT PROGRAM at the end of the 10-year commitment.	22.7% CQ1	5.9% CQ2	18.5% CQ 3	13.4% CQ	9.2% CQ 5	30.3% CQ 6
If I withdraw from the AGRICULTURAL DISTRICT PROGRAM at the end of the 10-year commitment, I will develop my parcels.	5.0% CR1	5.8% CR2	14.2% CR3	21.7% CR4	7.5% CR5	45.8% CR6

Please answer the following questions if you have ever considered enrolling in the EASEMENT (PDR) PROGRAM:

*A "**discount**" is the proportion of the appraised value of your easement (development rights), which you offer to give up in order to increase the chance that your offer is accepted.*

I have offered or would offer a large discount on the appraised value of my easement (development rights) because I have no immediate plans for development	2.8% CH1	7.5% CH2	17.0% CH3	10.4% CH4	21.7% CH5	40.6% CH6
I would be more interested in the total compensation received for my easement (development rights) than the discount	42.5% CI1	26.4% CI2	13.2% CI3	7.5% CI4	0.9% CI5	9.4% CI6
I have been or would be very uncertain about selecting the discount	23.3% CJ1	24.3% CJ2	20.4% CJ3	8.7% CJ4	9.7% CJ5	13.6% CJ6
It would be more important to me that my offer was successful than worrying about the discount	21.0% CK1	10.5% CK2	16.2% CK3	19.0% CK4	11.4% CK5	21.9% CK6
I am not interested in selling or developing my parcels; I have or will apply to the EASEMENT (PDR) PROGRAM strictly for the financial assistance	19.8% CM1	16.0% CM2	20.8% CM3	10.4% CM4	7.5% CM5	25.5% CM6
I am interested in developing my parcels to a nonagricultural use, and the EASEMENT (PDR) PROGRAM is the only thing that might stop me	6.6% CN1	7.5% CN2	14.2% CN3	17.9% CN4	17.9% CN5	35.8% CN6

PARCELS NOT ENROLLED AND AGRICULTURAL MANAGEMENT

Some farming households may NOT ENROLL all of the agricultural land parcels they own. The following questions ask about your parcels NOT ENROLLED in the AGRICULTURAL DISTRICT PROGRAM.

13. Are all of the parcels of farmland that your household owns ENROLLED in the AGRICULTURAL DISTRICT PROGRAM?

If yes, go to question 14 and please ignore all other questions about parcels NOT ENROLLED

YES 73.6% DA1 | NO 26.4% DA0

How many **acres** of agricultural land does your household own that are NOT ENROLLED? 269.6 X

Have any of these acres been in the Farmland Assessment Program in the past 10 years? *Farmland Assessment is the program that reduces property taxes on cropland.* YES 33.3% DC1 | NO 66.7% DC0

Were the parcels eligible for the AGRICULTURAL DISTRICT PROGRAM? YES 69.0% DD1 | NO 20.7% DD0 | Don't Know 10.3% DDdk

How well do the following statements describe your reasons not to enroll in the AGRICULTURAL DISTRICT PROGRAM?

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
I plan to sell these parcels and enrollment would keep me from getting the highest price possible	33.3% DQ1	18.5% DQ2	11.1% DQ3	0% DQ4	3.7% DQ5	33.3% DQ6
I am hedging by enrolling some parcels and not others	11.5% DU1	11.5% DU2	26.9% DU3	3.8% DU4	3.8% DU5	42.3% DU6
I plan to develop the parcels NOT ENROLLED	3.6% DV1	10.7% DV2	17.9% DV3	14.3% DV4	7.1% DV5	46.4% DV6

14. Please indicate the types of agricultural activities on your parcels ENROLLED and parcels NOT ENROLLED. (Please check all that apply.)

	ENROLLED	NOT ENROLLED (if applicable)		ENROLLED	NOT ENROLLED (if applicable)
Poultry	17.0% EB1	15.8% EN1	Corn	85.7% EF1	78.9% ER1
Dairy	2.7% EC1	10.5% EO1	Soybeans	87.5% EG1	89.5% ES1
Hogs	2.7% ED1	5.3% EP1	Vegetables	22.3% EH1	31.6% ET1
Other Livestock	10.7% EE1	15.8% EQ1	Other Crops	50.5% EI1	52.6% EU1

15. Do you lease or farm your parcels?

	ENROLLED	NOT ENROLLED (if applicable)
I farm them	50.0% EY1	45.5% FB1
I lease them	50.9% EZ1	54.5% FC1
Other	3.7% FA	4.5% FD

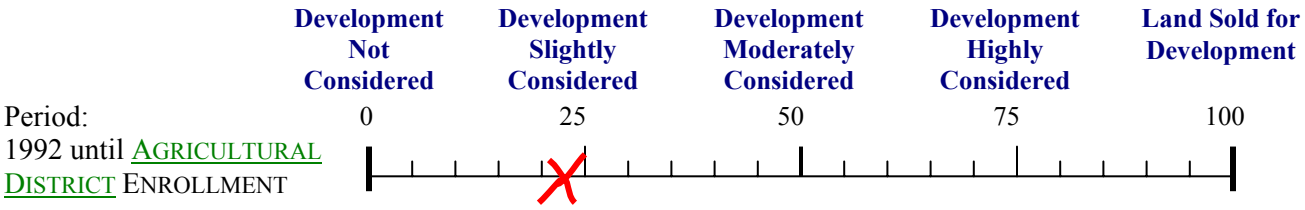
LAND PREFERENCES

The remaining questions have been designed to use statistical methods to reveal the underlying effectiveness of Delaware's farmland preservation programs.

For this page, please reflect on how your household thought about developing your agricultural land **in the past**. We know that landowners either sell their land for development or they don't. But some landowners come **closer** to developing than others. This may depend on their household's preferences, their financial position, and any unexpected family events.

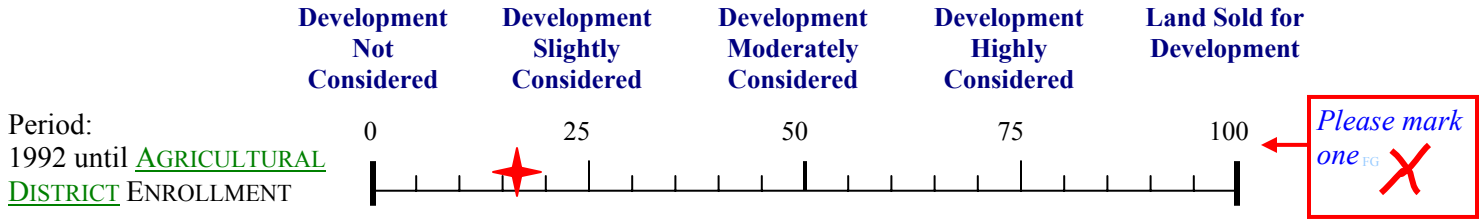
Example

Consider a landowner that enrolled in the AGRICULTURAL DISTRICT PROGRAM in 1997. This owner may have felt that he or she considered development briefly in 1994, but not very seriously. On a scale of 0 to 100, this landowner may have felt that the number "23" best represents the maximum consideration given to development. This landowner would then mark the scale:



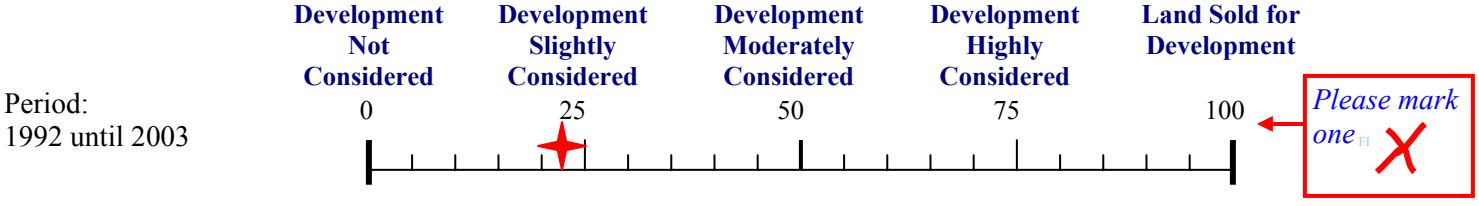
16. How close did your household come to selling any of your parcels ENROLLED for development between 1992 and the time of first entering the AGRICULTURAL DISTRICT PROGRAM?

*Please mark the **highest level of consideration** given to selling your land at prevailing market prices for developed land.*

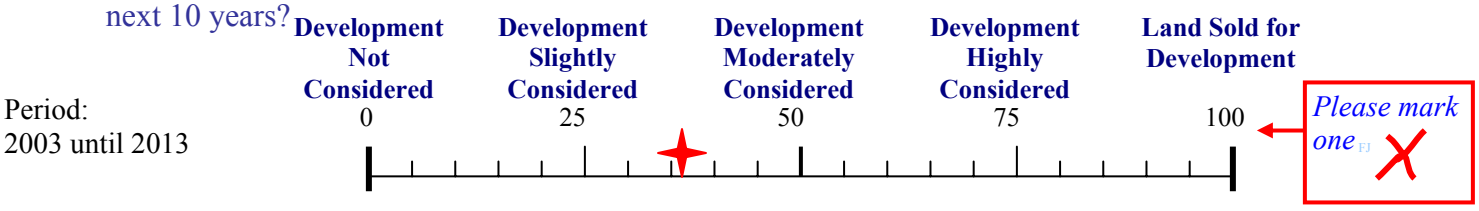


17. If you have parcels NOT ENROLLED, please answer the next two parts. Otherwise, go to the next page.

How close did your household come to selling any of the parcels NOT ENROLLED for development between 1992 and 2003?



How close do you think your household will come to selling any of the parcels NOT ENROLLED in the next 10 years?



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18. How much do you think your land is worth per acre? Please answer for parcels ENROLLED in the AGRICULTURAL DISTRICT PROGRAM and, if applicable, those NOT ENROLLED. Please restrict your estimate to the average **MARKET** value for all **NATURAL** lands (cropland, forestland, and wetlands) and **EXCLUDE** developed lands (residences, agricultural buildings, etc.).

Market Price (per acre)	ENROLLED	NOT ENROLLED (if applicable)
$500 - $1,500	0.9% GN	4.0% GO
$1,500 - $3,000	21.6%	20.0%
$3,000 - $4,500	30.2%	36.0%
$4,500 - $6,000	9.5%	16.0%
$6,000 - $7,500	5.2%	0%
$7,500 - $10,000	7.8%	0%
$10,000 - $15,000	7.8%	4.0%
$15,000 - $22,500	2.6%	4.0%
$22,500 - $35,000	3.4%	4.0%
$35,000 +	11.2%	12.0%

19. Including you, how many **HOUSEHOULD MEMBERS** (over 18) help make important operational or ownership decisions regarding the parcels (both ENROLLED and NOT ENROLLED)? 2.09 (avg) BS

20. How many of the **HOUSEHOULD MEMBERS** in question 19 fit each of the following classifications? (Please write a number in the appropriate boxes.) (Responses are averages)

Full-time operator	0.59 BT1	Retired	0.42 BW1
Part-time operator, working mainly on the farm	0.13 BU1	Not operators	0.65 BX1
Part-time operator, working mainly off the farm	0.28 BV1	Other: _____	0.03 BY

21. How many **TOTAL HOURS** in a typical **WEEK** do these people work at **FARMING** and managing the agricultural land parcels **OWNED** by the household? 30.5 BZ

22. Apart from the money earned, what is it that farming members of your household **VALUE** about **WORKING** on the farm? (Please check all boxes that apply.)

Raising crops and animals	51.0% FK1	Working outdoors	70.4% FL1	Working with family	54.1% FM1
Being your own boss	66.3% FN1	Working with nature	59.2% FO1	Other _____	1.1 FP

23. Apart from the income it provides, what is it that your household **VALUES** about **OWNING** land? (Please check all boxes that apply.)

Connection to family heritage	66.4% FQ1	Passing land on to children	74.4% FR1	Connection to nature	52.8% FS1
Stewardship of own land	60.8% FT1	Control over land use options	50.4% FU1	Other _____	0% FV

24. Please consider a hypothetical exercise. We are going to ask you how much more income your household would need in order to give up the quality-of-life benefits associated with **WORKING** on and **OWNING** a farm.

Non-Farming Job: Suppose for the hours of work in **QUESTION 21,** all decision makers in your household in **QUESTION 19** were offered Job X, which should be thought of as the best non-farming job for each person. Most things about Job X are the same as what you currently do:

You could live in the same house
You would work just as hard as you do now, but no harder
You would earn the same income for same hours of work

No Control: Suppose your household also was asked to give up control of your land with a 100-year lease of all farmland and machinery. This lease would pay you the same income you currently receive from your land and machinery, but without the control.

If your household accepts Job X and gives up control, you would no longer receive the things you value about **WORKING** on the farm in **QUESTION 22** and **OWNING** farmland in **QUESTION 23**.

Is there any amount of EXTRA income that someone could pay your household to accept this deal?

YES 41.5% FX1 | NO 58.5% FX0 → Thank you! Please place in the envelope and return.

How much EXTRA income EACH YEAR would your household need to switch to Job X and give up control? Remember that if you were to accept this hypothetical deal, you could no longer work on your farm or control its management. Please check one box at each payment level to indicate whether you'd accept the deal at each EXTRA-income level.

Please make one check at each level ✓

EXTRA payment each year	Would your Household accept JOB X?				
	Definitely Yes	Probably Yes	Unsure	Probably No	Definitely No
$0 FY	2.4%	0%	0%	4.9%	92.7%
$500 FZ	0%	0%	0%	4.9%	95.1%
$1,000 GA	0%	0%	0%	4.9%	95.1%
$3,000 GB	0%	0%	2.4%	7.3%	90.2%
$7,000 GC	0%	2.4%	2.4%	9.5%	85.7%
$15,000 GD	2.4%	4.9%	4.9%	7.3%	80.5%
$22,500 GE	2.4%	7.1%	7.1%	11.9%	71.4%
$35,000 GF	11.9%	14.3%	7.1%	19.0%	47.6%
$50,000 GG	20.5%	29.5%	20.5%	6.8%	22.7%
$100,000 GH	47.6%	28.6%	7.1%	4.8%	11.9%

If you answered "probably no" or "definitely no" to $100,000, what is the minimum payment your household would need to accept JOB X? $392,857 GI0

Thank you for completing this survey! Please feel free to write comments on the survey.

Please return to: Joshua M. Duke, Food and Resource Economics, University of Delaware, Newark DE 19716

Appendix 3
Survey Instrument for Nonparticipants

LAND PRESERVATION SURVEY

FOR AGRICULTURAL LANDOWNERS

A University of Delaware Study

Sponsored by
United States Department of Agriculture, National Research Initiative

With the Cooperation of
Delaware Agricultural Lands Preservation Foundation
Delaware Department of Agriculture

State records list you as the owner of one or more agricultural land parcels in Delaware. By "parcel" we mean the legally recognized farmland that you and members of your household **own**. If you **do not own agricultural land**, please check this box ☐ AA and return the survey.

This survey investigates the effectiveness of Delaware's AGRICULTURAL DISTRICT PROGRAM and the EASEMENT / PURCHASE OF DEVELOPMENT RIGHTS (PDR) PROGRAM. It is very important that we survey landowners who have decided NOT to enroll in these programs. Your responses are important to us—even if you do not know anything about these programs.

Please answer the questions on this survey for your **HOUSEHOLD** concerning your decisions about your agricultural land parcels.

1. Are you involved in decision making about your household's agricultural land parcels (say, whether or not to enroll them in a preservation program)?

YES 97.7% AB1 | NO 2.3% AB0 → If no, please pass the survey on to a person involved.

PARCELS AND AGRICULTURAL MANAGEMENT

We are interested in how many acres of agricultural land you own and how you manage these acres. By "agricultural land" we mean the acres of land that could be enrolled in farmland preservation programs, including: (1) cropland and pastureland; (2) forestland; (3) wetlands; and (4) land that agricultural buildings and residences may be located upon.

2. How many **acres** of agricultural land does your household own? 136.9 acres X

3. Do you lease or farm your parcels?

I farm them 30.9% FB1 | I lease them 53.7% FC1 | Other _____ 26.3% FD

4. We now have some questions about your acres of agricultural land from question 2. First, can you estimate the number of acres in crops, forest, and wetlands? What is the quality of the cropland and forestland?

Estimated Acres in:	Average Acres	Average Soil Productivity (Please check one box for cropland and one box for forestland): Very High	High	Medium	Low	Severely Limited
Cropland & Pasture	103.1	12.5% IO1	41.3 % IO2	39.4% IO3	6.7% IO4	0 IO5
Forestland	42.8	6.7% IP1	25.6% IP2	44.4% IP3	18.9% IP4	4.4% IP5
Wetlands	2.38					

Within 1 mile of your parcels, what would you estimate is the percent of land in agriculture? (Please check one box)	0 - 49% 19.2% IY4	50 - 79% 30.8% IY3	80 - 89% 32.5% IY2	90 - 100% 17.5% IY1
How far would you estimate that your parcels are from an urban area? (Please check one box)	Less than 1 mile 16.5% IB4	1 to 3 miles 34.7% IB3	3 to 5 miles 23.1% IB2	5 or more miles 25.6% IB1

How many of the following factors are present on your parcel? (Please answer 1, 2, 3, 4, or 5.) (a) Floodplain; (b) Wetlands; (c) Historic and cultural sites; (d) Endangered or unique vegetation or animals; and (e) Potential for impairment of water quality HZ 1(4),2(3) 3(2),4,5(1)

1	2	3	4	5
6.3%	6.3%	19.8%	62.2%	4.5%

Is there a central sanitary sewage system available within ¼ mile of your parcels?	YES 9.0% IA2	NO 91.0% IA1
Are any of your cropland acres irrigated?	19.7% IF1	80.3% IF2
Have any of these acres been in the Farmland Assessment Program in the past 10 years? *This program reduces property taxes on cropland.*	75.0% DC1	25.0% DC0
Have developers approached you with an offer to buy some or all of your parcels?	50.0% BC1	50.0% BC0
Have developers paid you for a right of first refusal on any of your parcels?	24.0% BE1	97.6% BE0

5. Please indicate the types of agricultural activities on your parcels. (Please check all that apply.)

Poultry	15.7% EN1	Dairy	0% EO1	Hogs	2.5% EP1	Other Livestock	11.6% EQ1
Corn	70.2% ER1	Soybeans	71.1% ES1	Vegetables	19.0% ET1	Other Crops	50.4% EU1

6. What is the average over the past 2 years, of gross sales of products grown on your farm (simply indicate sales in dollars, do not refer to gross or net profit from this property. Please check one box.)

Less than $1,000	18.3% IS	$5,000 - 9,999	17.2%	$25,000 - 49,999	14.0%	$100,000 - 499,999	10.8%
$1,000 - 4,999	17.2%	$10,000 - 24,999	12.9%	$50,000 - 99,999	9.7%	$500,000 or more	0.0%

THE AGRICULTURAL DISTRICT PROGRAM

The Delaware Agricultural Lands Preservation Foundation administers the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM. As you may know, owners who successfully apply to the AGRICULTURAL DISTRICT PROGRAM enjoy **tax advantages** and **protection from lawsuits** by residential neighbors. To be eligible for the AGRICULTURAL DISTRICT PROGRAM, you must:

- Own at least 200 contiguous acres of farmland/forestland *or*, with fewer acres, you must be located within 3 miles of an existing AGRICULTURAL DISTRICT.
- The agricultural land must be viable and productive.
- The parcel must be zoned for agriculture and not be subject to any major subdivision plan.

Participation in the AGRICULTURAL DISTRICT PROGRAM also entitles one to apply for **permanent** preservation in the EASEMENT (PDR) PROGRAM. Landowners in the EASEMENT (PDR) PROGRAM receive cash payments in exchange for a set of legal restrictions on their ability to develop their land. To date, about 400 landowners have participated in the AGRICULTURAL DISTRICT PROGRAM, and about 200 of these have successfully applied to the EASEMENT (PDR) PROGRAM.

7. Do you think that some of your parcels are eligible for the AGRICULTURAL DISTRICT PROGRAM?

YES	NO	Don't know
34.7% DD1	24.8% DD0	40.5% DDdk

8. Without considering eligibility, how likely are you to apply to the AGRICULTURAL DISTRICT PROGRAM in the future?

Very Likely	Likely	Somewhat Likely	Somewhat Unlikely	Unlikely	Very Unlikely
6.8% DX1	6.0% DX2	19.7% DX3	10.3% DX4	26.5% DX5	30.8% DX6

9. Prior to this survey, were you aware of the AGRICULTURAL DISTRICT PROGRAM or the EASEMENT (PDR) PROGRAM?

YES	NO	
65.0% AL1	35% AL0	If no, go to 13 →

10. Have you ever tried to enroll in the AGRICULTURAL DISTRICT PROGRAM?

YES	NO
4.9% DE1	95.1% DE0

11. How did you learn about the AGRICULTURAL DISTRICT PROGRAM? (Please check all that apply.)

Brochures	24.1% AM1	The Internet	0% AN1	Other farmers	67.1% AO1
Personal contacts with Program staff	11.4% AP1	News reports	45.6% AQ1	Other_____	2.8% AR

12. How well do the following statements describe your reasons **NOT** to enroll in the AGRICULTURAL DISTRICT PROGRAM?

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
I plan to sell the parcels and enrollment would keep me from getting the highest price possible	15.7% DQ1	8.6% DQ2	20.0% DQ3	4.3% DQ4	17.1% DQ5	34.3% DQ6
I plan to develop one or more of the parcels	8.7% DV1	5.8% DV2	11.6% DV3	10.1% DV4	20.3% DV5	43.5% DV6

13. How well do the following statements reflect your opinions about development, the AGRICULTURAL DISTRICT PROGRAM, and the EASEMENT (PDR) PROGRAM? (Please check one box for each statement.)

	Very Well	Well	Fairly Well	Somewhat Poorly	Poorly	Very Poorly
The AGRICULTURAL DISTRICT PROGRAM mainly interests me because of the possibility of selling my easement (development rights)	4.7% CA1	13.1% CA2	16.8% CA3	15.0% CA4	25.2% CA5	25.2% CA6
In the area near my parcels, farmers earn a lot more money by selling their land for development	44..6% CB1	13.4% CB2	19.6% CB3	8.0% CB4	5.4% CB5	8.9% CB6
My parcels are highly threatened by development pressures	18.9% CC1	9.0% CC2	25.2% CC3	19.8% CC4	13.5% CC5	13.5% CC6
I intend to sell my farm for development	5.4% CD1	5.4% CD2	11.7% CD3	13.5% CD4	11.7% CD5	52.3% CD6
I would require the full market value of my easement (development rights) if I were to enroll	41.3% CP1	12.5% CP2	20.2% CP3	9.6% CP4	5.8% CP5	10.6% CP6
I am not interested in selling or developing my parcels, but I would consider enrolling in the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM strictly for the financial assistance	10.8% CM1	13.5% CM2	16.2% CM3	12.6% CM4	17.1% CM5	29.7% CM6
I will eventually convert my parcels to a nonagricultural use, and the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM are the only things that might stop me	10.8% CN1	6.3% CN2	14.4% CN3	16.2% CN4	12.6% CN5	39.6% CN6

14. Please indicate a level of importance to you when considering whether you will apply to the AGRICULTURAL DISTRICT PROGRAM in the future.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To preserve land for my family	41.7% AW1	13.9% AW2	20.9% AW3	7.8% AW4	11.3% AW5	4.3% AW6
To protect my estate from taxes	27.9% AX1	18..0% AX2	27.0% AX3	9.0% AX4	12.6% AX5	5.4% AX6
To protect my operation from lawsuits by residential neighbors	30.0% AY1	10.0% AY2	22.7% AY3	13.6% AY4	14.5% AY5	9.1% AY6

15. Please indicate a level of importance to you when considering whether you will apply to the AGRICULTURAL DISTRICT PROGRAM and then to the EASEMENT (PDR) PROGRAM in the future.

	Very Important	Important	Somewhat Important	Somewhat Unimportant	Unimportant	Very Unimportant
To relieve pressure from debt	14.7% AZ1	8.3% AZ2	18.3% AZ3	10.1% AZ4	21.1% AZ5	27.5% AZ6
To provide retirement security	20.4% BA1	17.7% BA2	20.4% BA3	8.8% BA4	14.2% BA5	18.6% BA6
To re-invest in my operation	8.5% BB1	10.4% BB2	17.0% BB3	15.1% BB4	22.6% BB5	26.4% BB6

16. We have invented a program to test, using statistical analysis, how respondents balance their likelihood of development with their willingness to sell their easements (development rights). This is an academic exercise, and this program is **not real in any way**. Nevertheless, please try to answer this question as if you were actually making the decision.

Assume that Delaware was to offer a **NEW** preservation program to replace the AGRICULTURAL DISTRICT PROGRAM and the EASEMENT (PDR) PROGRAM. The **NEW** program:

- Has **no eligibility requirements**.
- Lets the State **buy** an **easement** from willing landowners for their **cropland and forestland**. This easement:
  - **Prevents** landowners from developing their land to a **nonagricultural** use.
  - Allows landowners to **retain full freedom** in managing their land in **agricultural** use.
- Will be **offered only once**—landowners would submit a request to join before the end of 2003.
- Would be voluntary—landowners can decide not to participate.
- Requires that landowners who want to participate **select** either Contract A or Contract B:

Contract A	The landowner sells the easement to the State for a payment of **$ 3,353** per acre. This contract has **no contingency clause**.
Contract B	Because the State expects to have enough money for **only one half** of the applicants for Contract B, the landowners selecting Contract B agree to a **contingency clause**: • At random, one-half (50%) of those seeking Contract B will receive a payment of **$ 25,713** per acre for their easement. • At random, one-half (50%) of those seeking Contract B will **NOT** receive the payment. Instead, for any lands that are still undeveloped (i.e., still in agricultural use) ____**6.84 YEARS** after January 1, 2004, the landowner must then **GIVE** the State the easement for **FREE**.

If this hypothetical program were offered once and would **NEVER** be offered again, what would you choose?

Contract A [21.8%] CY 1 Contract B [3.2%] CY 0 Neither contract/I would not participate [65.3%] CYna

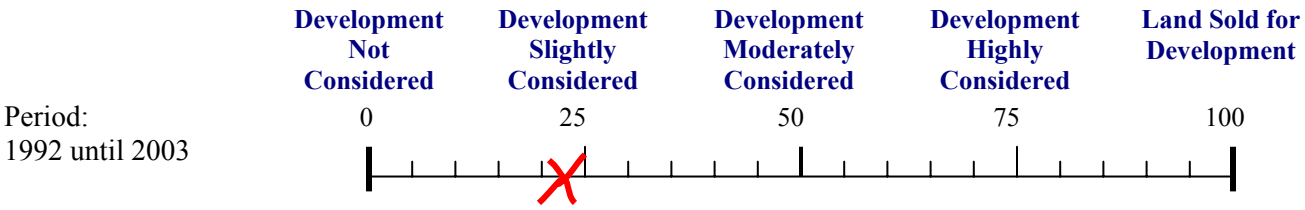
LAND PREFERENCES

The remaining questions have been designed to use statistical methods to reveal the underlying effectiveness of Delaware's farmland preservation programs.

For this page, please reflect on how your household thought about developing your agricultural land **in the past**. We know that landowners either sell their land for development or they don't. But some landowners come **closer** to developing than others. This may depend on their household's preferences, their financial position, and any unexpected family events.

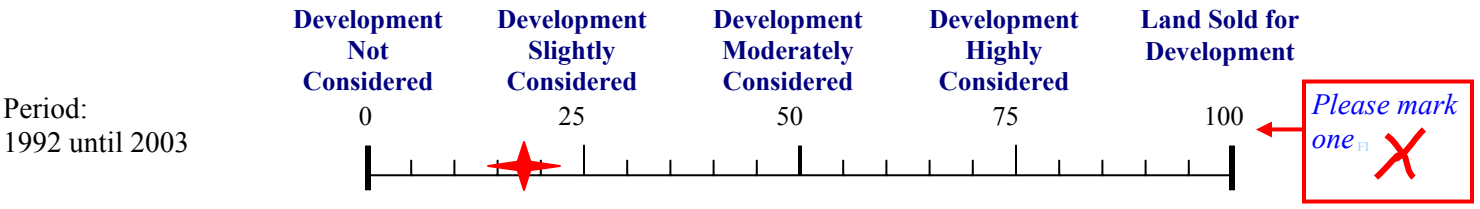
Example

Consider a landowner that felt that he or she considered development briefly in 1994, but not very seriously. On a scale of 0 to 100, this landowner may have felt that the number "23" best represents the maximum consideration given to development. This landowner would then mark the scale:

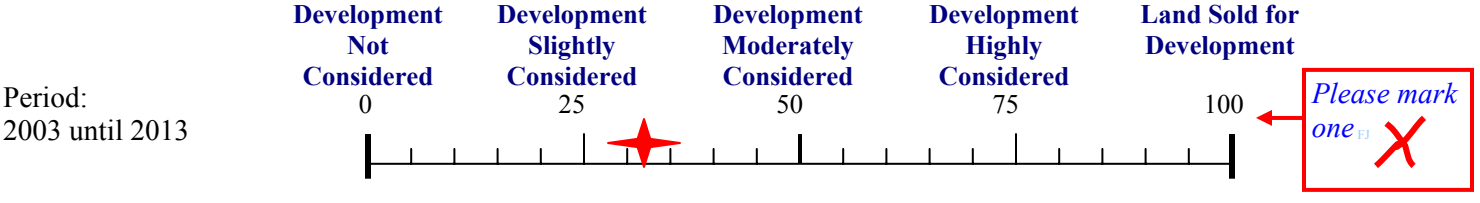


17. How close did your household come to selling any of your parcels for development between 1992 and 2003?

*Please mark the **highest level of consideration** given to selling your land at prevailing market prices for developed land.*



How close do you think your household will come to selling any of your parcels in the next 10 years?



These last questions are about how you and members of your household feel about owning agricultural land. Also, for those who actively farm, we are interested in your feelings about farming as a job.

18. How much do you think your land is worth per acre? Please restrict your estimate to the average **MARKET** value for all **NATURAL** lands (cropland, forestland, and wetlands) and **EXCLUDE** developed lands (residences, agricultural buildings, etc.).

Market Price (per acre)	Value of Your Parcels
$500 - $1,500	2.9% GO
$1,500 - $3,000	26.9%
$3,000 - $4,500	12.5%
$4,500 - $6,000	10.6%
$6,000 - $7,500	2.9%
$7,500 - $10,000	9.6%
$10,000 - $15,000	10.6%
$15,000 - $22,500	5.8%
$22,500 - $35,000	5.8%
$35,000 +	12.5%

Average price market price per acre: $11, 132

19. Including you, how many **HOUSEHOULD MEMBERS** (over 18) help make important operational or ownership decisions regarding your parcels? 1.78 (avg) BS

20. How many of the **HOUSEHOULD MEMBERS** in question 19 fit each of the following classifications? (Please write a number in the appropriate boxes.)

Full-time operator	0.23 BT1	Retired	0.39 BW1
Part-time operator, working mainly on the farm	0.08 BU1	Not operators	0.72 BX1
Part-time operator, working mainly off the farm	0.29 BV1	Other: _____	0.06 BY

21. How many **TOTAL HOURS** in a typical **WEEK** do these people work at **FARMING** and managing the agricultural land parcels **OWNED** by the household? 15.7 BZ

22. Apart from the money earned, what is it that farming members of your household **VALUE** about **WORKING** on the farm? (Please check all boxes that apply.)

Raising crops and animals	55.1% FK1	Working outdoors	60.3% FL1	Working with family	45.6% FM1
Being your own boss	52.6% FN1	Working with nature	50.0% FO1	Other _____	5.6% FP

23. Apart from the income it provides, what is it that your household **VALUES** about **OWNING** land? (Please check all boxes that apply.)

Connection to family heritage	52.9% FQ1	Passing land on to children	63.7% FR1	Connection to nature	46.0% FS1
Stewardship of own land	49.6% FT1	Control over land use options	40.7% FU1	Other _____	2.9% FV

24. Please consider a hypothetical exercise. We are going to ask you how much more income your household would need in order to give up the quality-of-life benefits associated with **WORKING** on and **OWNING** a farm.

Non-Farming Job: Suppose for the hours of work in **QUESTION 21,** all decision makers in your household in **QUESTION 19** were offered Job X, which should be thought of as the best non-farming job for each person. Most things about Job X are the same as what you currently do:

You could live in the same house
You would work just as hard as you do now, but no harder
You would earn the same income for same hours of work

No Control: Suppose your household also was asked to give up control of your land with a 100-year lease of all farmland and machinery. This lease would pay you the same income you currently receive from your land and machinery, but without the control.

If your household accepts Job X and gives up control, you would no longer receive the things you value about **WORKING** on the farm in **QUESTION 22** and **OWNING** farmland in **QUESTION 23**.

Is there any amount of EXTRA income that someone could pay your household to accept this deal?

YES 30.7% FX1 | NO 69.3% FX0 → Thank you! Please place in the envelope and return.

How much EXTRA income EACH YEAR would your household need to switch to Job X and give up control? Remember that if you were to accept this hypothetical deal, you could no longer work on your farm or control its management. Please check one box at each payment level to indicate whether you'd accept the deal at each EXTRA-income level.

Please make one check at each level ✓

EXTRA payment each year	Would your Household accept JOB X?				
	Definitely Yes	Probably Yes	Unsure	Probably No	Definitely No
$0 FY	0%	0%	0%	10%	90%
$500 FZ	0%	0%	0%	10.3%	89.7%
$1,000 GA	0%	0%	0%	10.3%	89.7%
$3,000 GB	0%	0%	0%	13.8%	86.2%
$7,000 GC	0%	0%	3.4%	20.7%	75.9%
$15,000 GD	0%	6.9%	0%	24.1%	69.0%
$22,500 GE	3.6%	3.6%	17.9%	17.9%	57.1%
$35,000 GF	10.0%	16.7%	16.7%	26.7%	30.0%
$50,000 GG	23.3%	23.3%	16.7%	6.7%	30.0%
$100,000 GH	43.4%	23.3%	6.7%	10.0%	16.7%

If you answered "probably no" or "definitely no" to $100,000, what is the minimum payment your household would need to accept JOB X? $457,142.9 GI0

Thank you for completing this survey! Please feel free to write comments on the survey.

Please return to: Joshua M. Duke, Food and Resource Economics, University of Delaware, Newark DE 19716

The Department of Food and Resource Economics
College of Agriculture and Natural Resources
University of Delaware

The Department of Food and Resource Economics carries on an extensive and coordinated program of teaching, organized research, and public service in a wide variety of the following professional subject matter areas:

Subject Matter Areas

Agricultural Finance
Agricultural Policy and Public Programs
Environmental and Resource Economics
Food and Agribusiness Management
Food and Fiber Marketing
International Agricultural Trade
Natural Resource Management
Operations Research and Decision Analysis
Price and Demand Analysis
Rural and Community Development
Statistical Analysis and Research Methods

The department's research in these areas is part of the organized research program of the Delaware Agricultural Experiment Station, College of Agriculture and Natural Resources. Much of the research is in cooperation with industry partners, other state research stations, the USDA, and other State and Federal agencies. The combination of teaching, research, and service provides an efficient, effective, and productive use of resources invested in higher education and service to the public. Emphasis in research is on solving practical problems important to various segments of the economy.

The department's coordinated teaching, research, and service program provides professional training careers in a wide variety of occupations in the food and agribusiness industry, financial institutions, and government service. Departmental course work is supplemented by courses in other disciplines, particularly in the College of Agriculture and Natural Resources and the College of Business and Economics. Academic programs lead to degrees at two levels: Bachelor of Science and Masters of Science. Course work in all curricula provides knowledge of tools and techniques useful for decision making. Emphasis in the undergraduate program centers on developing the student's managerial ability through three different areas, Food and Agricultural Business Management, Natural Resource Management, and Agricultural Economics. The graduate program builds on the undergraduate background, strengthening basic knowledge and adding more sophisticated analytical skills and business capabilities. The department also cooperates in the offering of an MS and Ph.D. degrees in the inter disciplinary Operations Research Program. In addition, a Ph.D. degree is offered in cooperation with the Department of Economics.

For further information write to: Dr. Thomas W. Ilvento, Chair
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