Enhancing Access to Preserved Farmland for Small and Medium-Sized Farmers

**Project Director**
Brian Schilling
*Assistant Extension Specialist, Rutgers, The State University of New Jersey*

**Co-Project Directors**
Joshua Duke
*Professor, University of Delaware*
Lori Lynch
*Professor, University of Maryland*

**Senior Investigators**
J. Dixon Esseks
*Professor Emeritus, University of Nebraska*
Paul Gottlieb
*Associate Professor, Rutgers, The State University of New Jersey*
Lucas Marxen
*Research Analyst/AFRI Project Manager, Rutgers, The State University of New Jersey*
Kevin Sullivan
*Senior Research Analyst, Rutgers, The State University of New Jersey*
Project Goals & Structure

• Provide a policy evaluation that offers useful insight to policy makers and farmland preservation practitioners

• Advance understanding of the land use, market, and socio-demographic dynamics impacting the affordability and access to (and interest in) preserved farmland

• Several research components:
  – PDR program administrator survey
  – **Econometric modeling of preserved farmland values**
  – *Modeling of farm profitability impacts of PDR participation*
  – Regional preserved farmland owner survey

• Geographic focus: NJ, MD, DE
  – Approx. 660,000 acres of preserved farmland through PDR
Highlight 1: Preserved Farmland Values

- **Methods:** Hedonic pricing models (OLS, SL, time restricted)
- **Data:** PDR program records on preserved NJ farms sold b/w 1990 and early 2007; local property tax record cards; other secondary sources; (n=211 complete cases)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1985-1989*</td>
<td>9</td>
<td>1,070</td>
<td>$2,493</td>
<td>N/A</td>
</tr>
<tr>
<td>1990-1994</td>
<td>22</td>
<td>3,210</td>
<td>$3,113</td>
<td>24.9</td>
</tr>
<tr>
<td>1995-1999</td>
<td>89</td>
<td>10,891</td>
<td>$3,064</td>
<td>(1.6)</td>
</tr>
<tr>
<td>2000-2004</td>
<td>153</td>
<td>15,076</td>
<td>$5,857</td>
<td>91.2</td>
</tr>
<tr>
<td>2005-2007</td>
<td>52</td>
<td>4,172</td>
<td>$10,111</td>
<td>72.6</td>
</tr>
<tr>
<td>Total</td>
<td>325</td>
<td>34,419</td>
<td>$5,128</td>
<td></td>
</tr>
</tbody>
</table>
## Highlight 1: Preserved Farmland Values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hypoth. Effect</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: natural log of price per acre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>+</td>
<td>7-19% annual appreciation</td>
</tr>
<tr>
<td>Residential infrastructure</td>
<td>+</td>
<td>21-31% increase</td>
</tr>
<tr>
<td>Size of house</td>
<td>+ (&amp; non-linear)</td>
<td>4-9%/1000 sq ft (no support for non-linearity hypothesis)</td>
</tr>
<tr>
<td>Agricultural structures (i.e., barns)</td>
<td>?? Asset? Or liability?</td>
<td>Not Sign.</td>
</tr>
<tr>
<td>Distance to major cities</td>
<td>-</td>
<td>0.6-0.7% decrease per mile distance</td>
</tr>
<tr>
<td>Future development flexibility</td>
<td>+</td>
<td>27-48% increase</td>
</tr>
</tbody>
</table>

- Other control variables were well-behaved (e.g., size of farm, median housing value in community, extent of rurality/urbanization, quality of soils, etc.)
- Good goodness-of-fit. $R^2$ ranged from 0.74 to 0.80.
Highlight 2: PDR & Farm Profitability

- **Methods**: Propensity score matching
  - PSM method used to address selection bias (allows comparison of farm profitability between preserved farms vs. observationally equivalent matches)
  - Matching is based on a vector of covariate (farm/operator characteristics, development potential, etc.)
  - Calculates the Average Treatment Effect on the Treated (ATT) for: (1) the full sample and (2) each of 8 USDA-ERS farm types
  - Several matching algorithms used; balancing tests conducted; overlap conditions examined

- **Data**: Respondent-level data from 2007 Census of Ag (NJ); other secondary data; PDR program records
Highlight 2: PDR & Farm Profitability

<table>
<thead>
<tr>
<th>ERS Farm Type</th>
<th>ATT (Profit Impact)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Sample</strong></td>
<td>Not significant</td>
</tr>
<tr>
<td><strong>Small Family Farms</strong></td>
<td></td>
</tr>
<tr>
<td>Residential/lifestyle</td>
<td>Not significant</td>
</tr>
<tr>
<td>Retirement</td>
<td>Not significant</td>
</tr>
<tr>
<td>Limited resource</td>
<td>Not significant</td>
</tr>
<tr>
<td>Low sales</td>
<td>Positive</td>
</tr>
<tr>
<td>High sales</td>
<td>Negative</td>
</tr>
<tr>
<td><strong>Large Scale Farms</strong></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>Not significant</td>
</tr>
<tr>
<td>Very large</td>
<td>Not significant</td>
</tr>
<tr>
<td><strong>Non-Family Farms</strong></td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Not surprising - consistent with *a priori* expectations

Surprising!

Expectations were ambiguous
Highlight 3: Landowner Survey

• **Methods:** CATI survey of preserved farmland owners in NJ, MD, DE conducted (Aug. 2011 – Jan. 2012)
  – Avg. length: 31.7 minutes
  – Topics: owner/operator characteristics, use of easement monies (if applicable), farm investments, succession plans, perceived benefits/challenges of PDR participation, overall satisfaction with program

• **Data:** n=507 respondents
  – Sampling frame = 5049 unique owners
  – 949 interview attempts
  – Response rate = 53.8%

<table>
<thead>
<tr>
<th>State</th>
<th>Cases</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware</td>
<td>59 (11.6%)</td>
<td>22,398 (22.1%)</td>
</tr>
<tr>
<td>Maryland</td>
<td>257 (50.7%)</td>
<td>52,683 (51.8%)</td>
</tr>
<tr>
<td>New Jersey</td>
<td>191 (37.7%)</td>
<td>26,593 (26.2%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>507</strong></td>
<td><strong>101,674</strong></td>
</tr>
</tbody>
</table>
Highlight 3: Landowner Survey
Structure of preserved farmland ownership

**Operator Status**
- 41% Owner-Operator
- 59% Owner-Non-Operator

**Pathway to Ownership**
- 69% 1st Generation
- 22% 2nd Generation
- 9% 1st and 2nd Generation

**Operator Status**
- 32% Owner-Operator
- 68% Owner-Non-Operator

**Pathway to Ownership**
- 62% 1st Generation
- 23% 2nd Generation
- 15% 1st and 2nd Generation
Highlight 3: Landowner Survey
Program satisfaction

“Looking back on [your experiences owning farmland preserved through conservation easements], how satisfied or dissatisfied are you with being an owner of farmland preserved in that way?” (n=505)

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Dissatisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>56.4%</td>
<td>35.8%</td>
<td>5.0%</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

- Examining correlation with farm and operator characteristics
- Is there information asymmetry (e.g., as evidenced by distance from preservation transaction)
- Is there variability with owner motivations for ownership?
- Are deed of easements perceived as being too restrictive in the context of an evolving agriculture industry?
Project Output and Future Plans

• Spawning related program evaluation research
  – PDR and farm profitability
  – PDR and alternative enterprise development

• Three articles under peer-review

• Several papers under development
  – Use of easement monies
  – Investment behavior (“residential” v. “commercial” operators)
  – “Buyer’s remorse”
  – Forthcoming research report (landowner survey)

• Academic conferences (AAEA, NAREA)

• Stakeholder outreach (program administrators; regional round-tables and future conference)

• Synergy with ongoing research on FRPP
Contact Information

Brian J. Schilling
Assistant Extension Specialist, Rutgers Cooperative Extension
Assistant Professor, Dept. of Agricultural, Food & Resource Economics
Rutgers, The State University of New Jersey
Tel: (848) 932-9127
schilling@aesop.rutgers.edu