Designing Conservation Auctions for Aquatic Ecosystem Services in Agricultural Watersheds

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Agricultural landscapes & water quality

Percent of Land Area in Crop Production, 2014

Photo Credit: U.S. Geological Survey, 2004
Spending on US Conservation Programs

Trends in major USDA conservation program expenditures, 1996–2013

$ billion (2012 dollars)

- Other (FPP, GRP, regional programs, watershed programs)
- Land-retirement programs (CRP, WRP)
- Working-land programs (EQIP, CSP, WHIP, CTA)

Source: ERS analysis of USDA Office of Budget and Policy Analysis (OBPA) data
Funding for working lands is increasing

Share of conservation spending by major programs and predecessors in the 2014 and previous farm acts

Objectives of our research

- Identify ways to design cost-effective agri-environmental programs that will result in getting the right practices, used on the right places, at the right time, implemented the right way.

- How can we accomplish this?
  - Understand the science
  - Understand the costs and benefits of adopting various conservation practices
  - Understand farmer preferences for different types of conservation incentives and contracts (E.g., payments, green insurance, tax credits, price premiums for stewardship certification).
Why Conservation Auctions?

Conservation (reverse) auction

Allows multiple landowners (sellers of environmental services) to compete for BMP contracts from a conservation organization (buyer of environmental services).

- More environmental benefits from limited conservation budgets →
  More environmental bang for our conservation buck!

- Farmers can propose flexible BMP scenarios
Year 1 Pilot Auctions: Testing conservation incentives

- **Direct payments:** Gov’t or NGO funded (e.g. EQIP, CRP)
  - One-time cost-share
  - Annual stewardship payments

- **Market incentives**
  - Market access
  - Price premiums

- **Other incentives**
  - Best Management Practice (BMP) insurance
  - Subsidized taxes or fees (e.g., tax credits).
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Real conservation auctions in the Lake Erie Basin

http://www.defiancetiffinbmpauction.org/
Two Auctions:
1) Fulton County, OH
2) Defiance County, OH
Three Eligible BMPs:
1. Cover Crop
2. Filter strip
3. Subsurface Drainage Control Structure

$25,000 budget for each county

Group bidding allowed in both counties
Defiance County landowners got additional information about the potential environmental benefits from adopting BMPs on their land.
Mailed invitations to ~ 507 landowners in Defiance and ~ 534 landowners in Fulton (June 28th).

» 24 requested that paper bid packets be mailed directly to them

Websites:


Press releases in the newspaper, newsletters, radio

Reminder postcards mailed to all landowners September 2nd, 2014.

Bids due September 30th, 2014 for 2015 BMPs.
36 bids submitted → $62,550 and 1,500 acres
- 75% of bids for cover crops ($30 - $50 / acre)
- 14% for drain control structures ($1,200 - $2,000 ea.)
- 11% for filter strips

Bids ranked on the cost per pound of bioavailable phosphorus reduction

29 bids accepted → $50,575 and 1,200 acres
- Filter strips were the most cost-effective
Lessons learned

- Farmers want information about:
  - How much to bid → guidelines requested.
  - Environmental impacts → which BMPs are best?
  - How BMPs affect their bottom line.
    » Technical support is needed

- Bid evaluation is time intensive → simplify?

- Model assumptions matter & impact bid ranking
1% bidding rate... why?

- **Other conservation programs** in the Tiffin Watershed – sponsored by NRCS, DNR, and others.

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Agriculture Department gives Ohio emergency money to fight algae blooms

Coastal Grants to Improve Lake Erie Access, Education and Water Quality

**USDA Invests New Conservation Funds to Improve Lake Erie Water Quality**

USDA Office of Communications sent this bulletin at 08/19/2014 10:10 AM EDT

You are subscribed to USDA Office of Communications.
1% bidding rate... why?

- **Other conservation programs** in the Tiffin Watershed – sponsored by NRCS, DNR, and others.

- **Time and effort involved** to submit a bid

- **Uncertainty** about how much to bid and if the bid would be accepted.
  - Belief that bid would be rejected, based on prior cost-share programs that did not model ecological impact.

- **Unfamiliar with the program**
Using a follow-up survey, we want to learn...

- **How to improve the design of performance-based conservation programs**
- **At what point did we “lose” folks?** Did they read the invitation, visit the website, request bid packet, etc.?
- **Why individuals chose not to bid?**
- **Could the auction process be simplified and still lead to the same result?**
Many thanks to our project partners & supporters

Ohio Soil & Water Conservation Districts
Ohio Corn and Soybean Farmers

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Agricultural, Food, & Resource Economics
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website: www.leahpalmforster.wix.com/leah

What questions do you have?
36 bids were submitted by Sept. 30th

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<thead>
<tr>
<th></th>
<th>Fulton</th>
<th>Defiance</th>
<th>Total</th>
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<tbody>
<tr>
<td># of producers bidding</td>
<td>6</td>
<td>4</td>
<td>10</td>
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<tr>
<td># of total bids submitted</td>
<td>24*</td>
<td>12</td>
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* One bid was ineligible because it is located east of the Tiffin watershed.

Note: No group bids were submitted
36 bids were submitted by Sept. 30th

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<td>19</td>
<td>8</td>
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<td># of bids for drainage control structures</td>
<td>1</td>
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<td>Approx. acres treated</td>
<td>998</td>
<td>510</td>
<td>1,508</td>
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<td>Total funding requested</td>
<td>$35,926</td>
<td>$26,620</td>
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Classic externality problem
Farmers have property rights.
Payments for environmental services (PES)
  » How much should we pay?
  » What form of payment?
  » How should contracts be structured?
Targeted and straightforward programs are needed

Cost-effectiveness of accepted contracts for in-field practices

Producers were worried about transaction costs

Certification did not target vulnerable land

$/lb. of phosphorus reduction

Type of conservation incentive

- Paulding County
- Henry County
- Wood County
- Hancock County