

Research/Extension Program Overview

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AEM1101, Faculty Research Panel, September 11, 2023

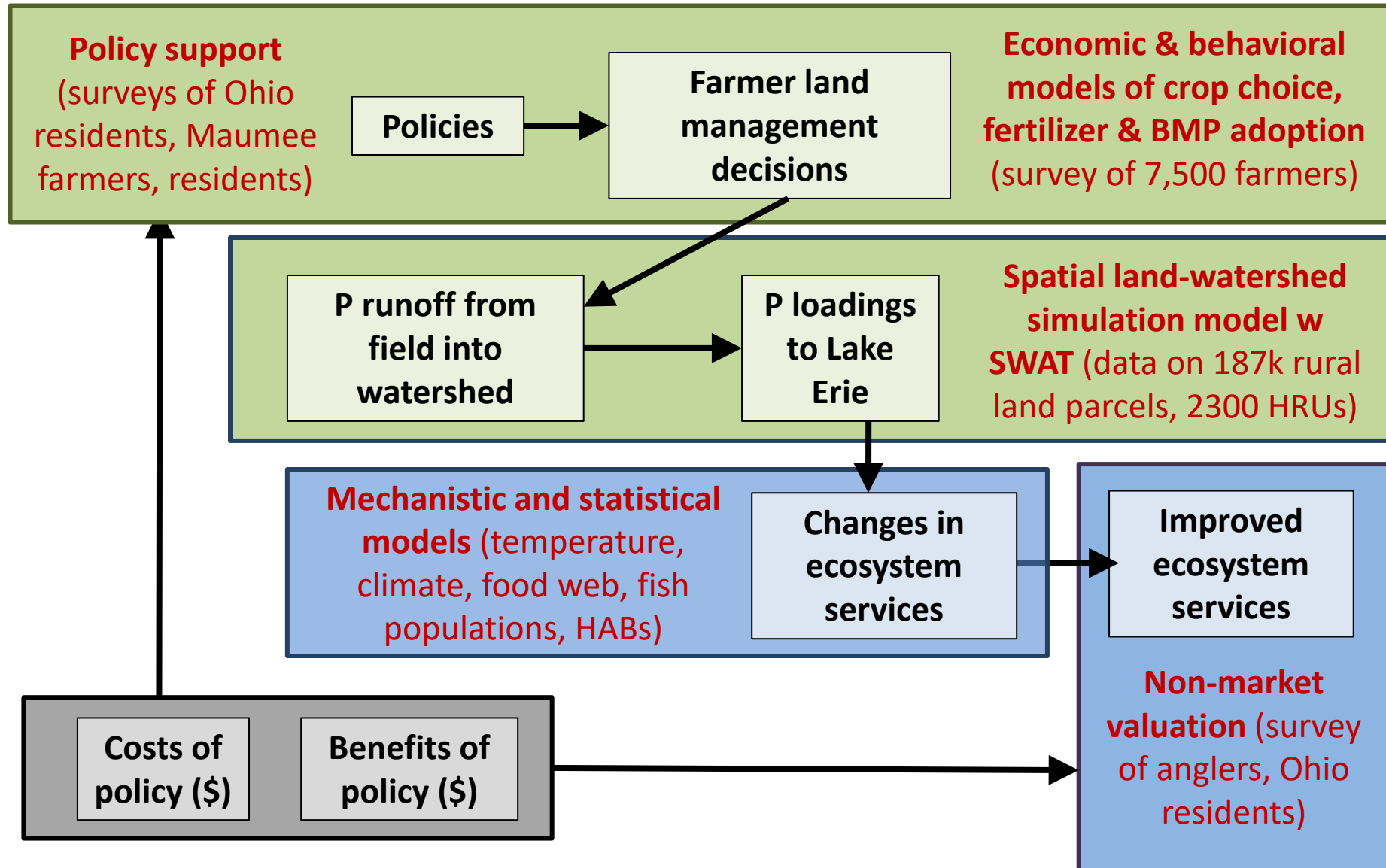


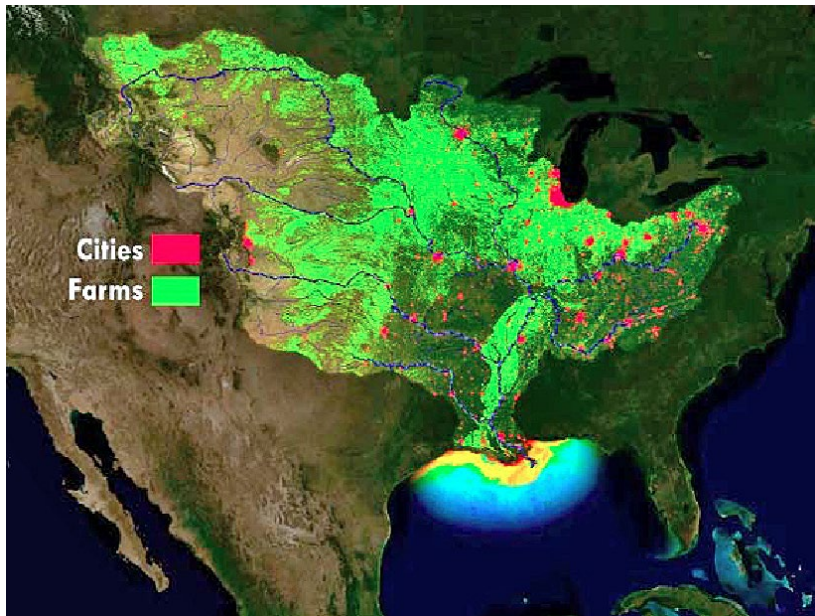
Dyson
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Research & Extension Program Themes

- **Theme I: Agriculture & the Environment**
- **Theme II: Land Value, Land Ownership, Land Tenure, Land Use**
- **Theme III: Chinese Agriculture & its Global Trade Implications**
- Other Useful information:
 - Appointment: 50% Research & 50% Extension
 - Joined Cornell Dyson School & Cornell Cooperative Extension in July 2022
 - Faculty Affiliate, Cornell Institute for China Economic Research (CICER)
 - Faculty Fellow, Cornell Atkinson Center for a Sustainable Future
 - Led Iowa land value survey; co-founded the ISU China Ag Center
 - New Projects in New York State
 - Ag & Solar; Agrivoltaics (joint with David Kay and Rich Stedman)
 - Floodplain paddy rice farming (joint with Jenny Kao-Kniffin and Susan McCouch)
 - Carbon credits for dairy farmers (joint with Chris Wolf)
 - US Northeast Land Value & Rent Trends (joint with ASFMRA Northeast Chapter)

Theme I: Agriculture & the Environment





Harmful algal blooms in Finger Lakes



Taughannock Falls State Park closed swimming areas multiple times owing to toxic algae outbreaks. Photo: Jeff Katris



Top: Dead Zone in the Gulf of Mexico

Bottom: Great Atlantic Sargassum Belt in the Caribbeans

Farmer Decision Making

Land Economics

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Institution: IOWA STATE UNIV

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Full Text (PDF)

Hongxing Liu, Wendong Zhang, Elena Irwin, Jeffrey Kast, Noel Aloysius, Jay Martin, and Margaret Kalcic

Best Management Practices and Nutrient Reduction: An Integrated Economic-Hydrologic Model of the Western Lake Erie Basin

Land Economics November 2020 96:510-530;



Journal of Great Lakes Research

Volume 42, Issue 6, December 2016, Pages 1343-1356



What motivates farmers to apply phosphorus at the “right” time? Survey evidence from the Western Lake Erie Basin

Wendong Zhang ^a , Robyn S. Wilson ^b, Elizabeth Burnett ^b, Elena G. Irwin ^c, Jay F. Martin ^d



Land Use Policy

Volume 79, December 2018, Pages 609-621



Do farmers adopt fewer conservation practices on rented land? Evidence from straw retention in China

Li Gao ^a , Wendong Zhang ^b , Yingdan Mei ^a , Abdoul G. Sam ^c , Yu Song ^d , Shuqin Jin ^e

New projects incorporates experimental design in farmer surveys



IOWA STATE UNIVERSITY
College of Agriculture and Life Sciences
Iowa Nutrient Research Center

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Improving the Effectiveness of Conservation Programs through Innovative Reverse Auctions and Sensible Enrollment Restrictions

Date: Sep 2017

Investigators: Wendong Zhang, Gregory Howard

Cleaner Water Begins with You!


Edge-of-field Conservation Practices Benefit Water Quality and Wildlife

Cleaner Water Begins with You!

Edge-of-field Conservation Practices Improve Water Quality

↓52%

Water quality enhancement wetlands decrease nitrogen going into surface water by an average of 52 percent, depending on the size of the wetland.



Numerous species of birds, insects, mammals, reptiles, and amphibians—including **species of greatest conservation need**—rely on wetlands as valuable habitat.




Edge-of-field practices could work for you and for the watershed!


No one practice is ideal for all sites, so talk to your local conservation or Extension team—they can point you to science-based tools that will help with your decision. You'll be helping to strengthen the overall health of your watershed and improving water quality in Iowa and beyond.

↓52%

Water quality enhancement wetlands decrease nitrogen going into surface water by an average of 52 percent, depending on the size of the wetland.



Restored oxbows decrease nitrogen entering surface water by an average of 56 percent.



Wetlands, especially oxbows, also provide additional water storage on the landscape.


ARTICLE |  Full Access




Evaluating the tradeoff between cost effectiveness and participation in agricultural conservation programs

Gregory Howard, Wendong Zhang , Adriana Valcu-Lisman, Philip W. Gassman

First published: 22 February 2023 | <https://doi.org/10.1111/ajae.12397> | Citations: 1

Funding information: Iowa Nutrient Research Center, Grant/Award Number: 2017-07 GS-140136; USDA National Institute of Food and Agriculture Hatch, Grant/Award Number: IOW04099

 SECTIONS

 PDF  TOOLS  SHARE

Abstract

Using a survey of 430 farmer respondents in the Boone and North Raccoon River watersheds in Iowa, we examine the impacts of three program innovations—reverse auctions, spatially targeted payments, and higher offered payments—on agricultural conservation program cost effectiveness and participation by farmers. We combine farmer responses to a discrete choice experiment offering voluntary conservation contracts with township-level estimates of per-acre nitrogen reductions from each practice derived from the process-based ecohydrological Soil and Water Assessment Tool model. Using a random-parameters logit model, we show that both cost-reducing and benefit-boosting interventions reduce budgetary costs per projected pound of nitrogen removed from the watershed for each practice and thus are more cost effective than the prevailing current cost-share programs. However, we find that these interventions can reduce participation by 30%–70%. Our policy simulations show that even with large budgets, the watershed-level nitrogen reduction from all policy interventions remains far below the policy targets set by the Iowa Nutrient Reduction Strategy. Furthermore, we find cover crop contracts are far more cost effective than no-till/strip-till split nitrogen application contracts.



Economic Research Service

Are You a Student Looking for an Internship?

The Pathways Program is designed to provide the student with the knowledge, skills, and/or abilities while being employed in the Federal government. The Pathways Program consists of three categories: internship, recent graduate, and the [Presidential Fellows Management programs](#). Each program is unique and they all provide development experience in conjunction with former education. The student can determine which program best suits their interest and/or skills and abilities.

In the Internship Program, ERS hires students for summer internship positions during the summer. The summer internship program provides paid opportunities for the student to work full-time or half-time until September 30th. A student must be enrolled full-time or half-time at an accredited school (high school, technical or vocational school, 2 or 4 year college, university, graduate, or professional school) and is in good academic standing (2.0 GPA or better). All student positions are advertised via usajobs.gov. The student must submit all required documents via usajobs.gov.

Non-market valuation: valuing ecosystem services

American Journal of
Agricultural Economics



Article |  Full Access

Do U.S. Anglers Care about Harmful Algal Blooms? A Discrete Choice Experiment of Lake Erie Recreational Anglers

Wendong Zhang  Brent Sohngen

First published: 23 March 2018 | <https://doi.org/10.1093/ajae/aay006> | Citations: 23

Abstract

Despite the growing awareness of harmful algal blooms (HABs) in the United States and abroad, estimates of welfare losses due to their presence are missing from the literature. Using a mail survey of 767 Ohio Lake Erie recreational angler respondents and a choice experiment, this study provides the first empirical quantification of the economic impacts of HABs on U.S. recreational anglers. Our results demonstrate a significant and substantial willingness to pay by anglers for reduction in HABs, beyond the benefits associated with conventional water quality measures such as catch rates and water clarity. For instance, we find that anglers are willing to pay \$8 to \$10 more per trip for one less mile of boating through HABs en route to a fishing site. This finding suggests that explicit measures of HABs need to be collected and considered when valuing water quality in nutrient-rich bodies of water. We evaluate the welfare improvements resulting from several nutrient reduction policies, and find that anglers are willing to pay on average \$40 to \$60 per trip for a policy that cuts upstream phosphorus loadings by 40%. The majority of welfare gains for anglers result from improving the non-catchable component of the fishing experience, notably water clarity and HAB reduction, as opposed to better chances of angler success.





Fudan University – BSc. Environmental Science
University of Hong Kong – Exchange Student,
Envi. Eng. [Took my first ArcGIS class]

Wendiam Patrick McCracken Sawadgo



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What drives landowners' conservation decisions? Evidence from Iowa

W.P.M. Sawadgo, W. Zhang, and A. Plastina

Abstract: Conservation practices such as no-till and cover crops have been shown to have on- and off-farm benefits. However, when benefits of a practice do not go to the provider, underinvestment may occur. Farmland rental arrangements where tenants may not reap the benefits of conservation investments are a commonly cited barrier to conservation practice adoption in agriculture and may result in lower adoption rates on rented land than on owner-operated fields. This issue is especially important since more than half of Midwestern farmland is rented out. This article examines the factors driving adoption of four key conservation practices—no-till, cover crops, buffer strips, and ponds/sediment basins—using a statistically representative survey of Iowa landowners. We find evidence supporting the hypothesis that adoption is lower on rented land for cover crops, buffer strips, and sediment basins, but not for no-till. Our results also show that the large proportion of the state's land owned by nonoperating landowners and absentee landowners could present a barrier to increasing adoption of conservation practices. Furthermore, landowners seem open to increasing the use of cover crops in the immediate future, and a sizable number are even willing to incentivize tenants by paying for part of the cover crop planting cost. Finally, almost half of landowners would be willing to increase the area of their land under conservation practices if they could receive conservation-related tax credits or deductions, suggesting a potential policy strategy to increase adoption.

Key words: absentee landowners—conservation practice—cover crops—land tenure—non-operating landowners—no-till

Selected New Projects – Ag & Solar

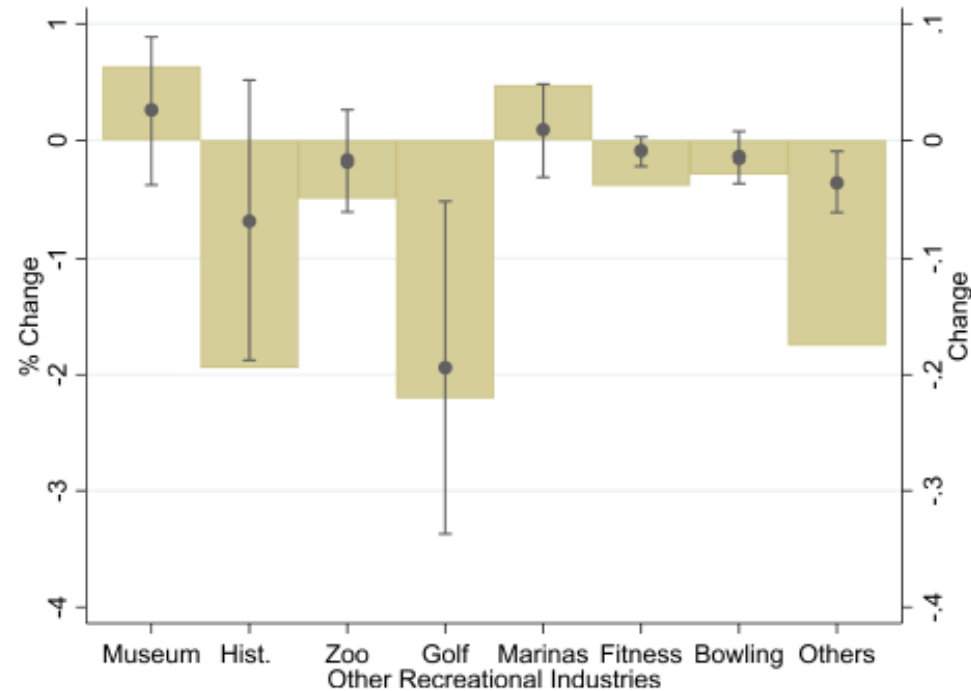
looking for an hourly RA to build an ArcGIS StoryMaps



6MW solar arrays near Mohawk River & Albany installed in 2021 (left: 5/2020; right: 5/2021)

Selected New Projects

Wildfire & Recreation using cellphone foot traffic data



Significant impact of wildfire smoke and air pollution on outdoor recreation:
50% increase in smoke days in a week is associated with a 2-3% reduction in
recreational visits; # visitors; how long you stay → \$6 billion loss in recreational value

Thank you!

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