

# CURRICULUM VITAE

## JOSHUA M. DUKE

*Chair of Agricultural Economics and Rural Sociology*

*Professor of Agricultural Economics*

October 2019

Dept. of Agricultural Economics and Rural  
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### RESEARCH INTERESTS

Land Economics, Water Economics, Law and Economics, Property Rights

### PROGRAMS OF FUNDED RESEARCH

Analysis of Agri-Environmental Policy under Information Asymmetry, Evaluation of Land Taxation  
Policy, Effect of Land Use on Water Outcomes

### PROFESSIONAL APPOINTMENTS

Chair and Professor of Agricultural Economics and Rural Sociology, Auburn Univ., 2019-  
Univ. of Delaware, 1998-2019

Professor of Applied Economics and Statistics, (60% research; 40% teaching), 2008–19; Assoc.  
Prof., 2004–08; Asst Prof., 1998–04

Professor, School of Marine Science & Policy, College of Earth, Ocean, and Env't, 2011–19

Professor of Economics, College of Business and Economics, 2006–19

Professor of Legal Studies, 2002–19; Affiliated Fac., 2000–02

Univ. of Wisconsin-Madison, 1994-1998

Teaching Asst, Dept. of Econ., 1998

Research Asst, Dept. of Agric. and Applied Econ., 1994–98

### EDUCATION

Ph.D., Agricultural and Applied Econ., Ph.D. minor in Law, Univ. of Wisconsin-Madison, 1998

Thesis: An Institutional and Behavioral Analysis of Land-Use Conflict Resolution

M.S., Public Policy Analysis, Univ. of Rochester, 1994

B.A., History and B.A., Political Science, Univ. of Vermont, 1992

### HONORS AND AWARDS

1. 2018 U.S. Department of Agriculture Food and Agricultural Sciences Excellence in Teaching Award, North East Region Winner (one of six regional awardees in the U.S.).
2. Editorial Board, *Land Economics*, 2007-present, most recent reappointment 2016-2019
3. 2018 Excellence in Teaching Award, Univ. of Del. (4 awarded yearly of approx. 1,200 faculty)
4. 2017 Excellence in Teaching and Advising Award, College of Agric. and Natural Res, Univ. of Del.
5. 2018 David C. Lincoln Fellow, Lincoln Institute of Land Policy
6. 2016 David C. Lincoln Fellow, Lincoln Institute of Land Policy
7. Distinguished Member, NE Agr Res Econ Assoc
8. Recognition of Outstanding Service, NE Agr Res Econ Assoc (Awarded three times: '15, '10, '06)
9. Elected President, Past-President, President-Elect, NE Agr Res Econ Assoc.
10. Advisory Panel on Nutrient Trading, Chesapeake Bay Commission
11. Council of Fellows, Delaware Environmental Institute

12. Council of Fellows, Laboratory for Experimental and Applied Economics, Univ. of Del.
13. Faculty Affiliate, Center for Critical Zone Research, Univ. of Del.
14. Chair's Award for Academic Excellence, Dept. of Applied Econ. and Statistics, Univ. of Del.
15. New Castle County Farmland Advisory Committee, Del., Appointed by County Executive
16. Executive Board Member (elected), NE Agr Res Econ Assoc
17. Faculty Advisory Board of the Center for Teaching Effectiveness, Univ. of Del.
18. Who's Who in Agriculture Higher Education
19. Visiting Assoc. Prof. (elected to title), Dept. of Law, Faculty of Econ. Mgmt., Slovak Agric. Univ.
20. Fellow, Institute for Transforming Undergraduate Education, Univ. of Del.
21. Doctoral Dissertation Fellowship, Lincoln Institute for Land Policy, Cambridge, Mass.
22. Phi Alpha Theta, Univ. of Vermont, incl. Chapter President, Chapter Vice-President
23. Phi Beta Kappa, *Cum laude* graduate, Departmental Honors, Political Science, Univ. of Vermont

## PUBLICATIONS

### *Citation Metrics*

SSCI 840 with 7.9% self-citation rate; Google Scholar 2,143 as of 9/30/19; SSCI/GS ratio = 39%.

### *Book and Journal Editing*

1. *Water Resources Research* (Associate Editor, Jan. 2014 – Jan. 2018).
2. *The Oxford Handbook of Land Economics*, ed. Joshua M. Duke and JunJie Wu. 2014. New York: The Oxford University Press. 735 pages with 28 chapters by leading scholars in land economics.
3. *The Newsletter of the Northeastern Agricultural and Resource Economics Association*. Fall 2013 and Spring 2014.
4. *Agricultural and Resource Economics Review* (edited with Titus O. Awokuse). 2007-2010. Published 8 issues 2008-2010. Led expansion of journal to 3 issues per year.

### *Refereed Journal Articles, Law Review Articles, and Chapters*

1. Schilling, Brian, Sullivan, Kevin, J. Dixon Esseks, Lori Lynch, Joshua Duke, Paul Gottlieb. Farmland Owners' Satisfaction with Agricultural Conservation Easements: Is there Seller's Remorse? Forthcoming at *Society and Natural Resources*.
2. Bernard, John C., Joshua M. Duke, and Sara E. Albrecht. 2019. Do labels that convey minimal, redundant, or no information affect consumer perceptions and willingness to pay? *Food Quality and Preference* 71:149-157.
3. Palm-Forster, Leah H., and Joshua M. Duke. 2019. An endogenous equilibrium game on traffic congestion externalities. *The J of Economic Education* 50(1):57-69.  
DOI: 10.1080/00220485.2018.1551095. Worksheet available at: <http://udspace.udel.edu/handle/19716/23712>
4. Duke, Joshua M., and TianHang Gao. 2018. An experimental economics investigation of the land value tax: Efficiency, acceptability, and positional goods. *Land Economics* 94(4):475-495.
5. Suter, J., S. Collie, K.D. Messer, J.M. Duke, H. Michael. 2018. Common pool resource management at the extensive and intensive margins: Experimental evidence. *Environmental and Resource Economics* 73(4):973-93.
6. Fooks, Jacob R., Kent D. Messer, Joshua M. Duke, Janet B. Johnson, and George R. Parsons. 2017. Continuous Attribute Values in a Simulation Environment: Offshore Energy Production and Mid-Atlantic Beach Visitation. *Energy Policy* 110:288-302.
7. Fooks, Jacob R., Kent D. Messer, Joshua M. Duke, Janet B. Johnson, Tongzhe Li, and George R. Parsons. 2017. Tourist Viewshed Externalities and Wind Energy Production. *Agricultural and Resource Economics Review* 46(2):224-41.
8. Duke, Joshua M., Kent D. Messer, Lori Lynch and Tongzhe Li. 2017. The Effect of Information on Discriminatory-Price and Uniform-Price Reverse Auction Efficiency: An Experimental Economics Study of the Purchase of Ecosystem Services", *Strategic Behavior and the Environment* 7(1-2):41-71.  
<http://dx.doi.org/10.1561/102.00000073>
9. Messer, Kent D., Joshua M. Duke, Lori Lynch, and Tongzhe Li. 2017. When does public information undermine the efficiency of reverse auctions for the purchase of ecosystem services? *Ecological*

- Economics*, 134:212-226.
10. Duke, Joshua M. and David Sassoon. 2017. A classroom game on a negative externality correcting tax: Revenue return, regressivity, and the double dividend. *Journal of Economic Education* 48(2):65-73.  
<http://dx.doi.org/10.1080/00220485.2017.1285736>
  11. Duke, Joshua M., Brian J. Schilling, Kevin P. Sullivan, J. Dixon Esseks, Paul D. Gottlieb, and Lori Lynch. 2016. Illiquid Capital: Are Conservation Easement Payments Reinvested in Farms? *Applied Economic Perspectives & Policy* 38(3):449-73.
  12. Fooks, Jacob, Nate Higgins, Kent D. Messer, Joshua M. Duke, Daniel Hellerstein, and Lori Lynch. 2016. Conserving spatially explicit benefits in ecosystem service markets: Lab and artefactual field tests of network bonuses and spatial targeting. *American Journal of Agricultural Economics* 98(2):468-88.
  13. Duke, Joshua M., Jules Bruck, Susan Barton, Megan Murray, Shreeram Inamdar, and Douglas W. Tallamy. 2016. Public preferences for ecosystem services on exurban landscapes: A case study from the mid-Atlantic, USA. *Heliyon* 2(7): e00127 (pp1-27).  
Open access available at <http://dx.doi.org/10.1016/j.heliyon.2016.e00127>
  14. Bachman, Matthew, Shreeram Inamdar, Sue Barton, Joshua M. Duke, Doug Tallamy, Jules Bruck. 2016. A comparative assessment of runoff water quality from turf, forest, meadow, and mixed landuse watersheds. *Journal of American Water Resources Association*, 52(2):397-408
  15. Duke, Joshua M., and Ben Attia. 2015. Negotiated solar rights conflict resolution: A comparative institutional analysis of public and private processes. *Journal of Environmental & Sustainability Law* 22(1):1-52.
  16. Duke, Joshua M., Steven J. Dundas, Robert J. Johnston, and Kent D. Messer. 2015. The effect of spatial interdependencies on prioritization and payments for environmental services. *Land Use Policy*. 48:341-350.
  17. Fooks, Jacob R., Kent D. Messer, Joshua M. Duke. 2015. Dynamic entry, reverse auctions, and the purchase of ecosystem services. *Land Economics* 91(1):57-75.
  18. Gottlieb, Paul D., Brian J. Schilling, Kevin Sullivan, J. Dixon Esseks, Lori Lynch, Joshua M Duke. 2015. Are preserved farms actively engaged in agriculture and conservation? *Land Use Policy*. 45:103-116.
  19. Egan, Jennifer M., and Joshua M. Duke. 2015. Water quality conflict resolution and agricultural discharges: Lessons from *Waterkeeper v. Hudson*. *William & Mary Environmental Law and Policy Review* 39(3):533-574.
  20. Schilling, Brian J., J. Dixon Esseks, Joshua M. Duke, Paul D. Gottlieb, and Lori Lynch. 2015. The future of preserved farmland: Ownership succession in three mid-Atlantic states. *Journal of Agriculture, Food Systems, and Community Development*. 5(2):129-153
  21. Liu, Zhuo, Jordan F. Suter, Kent D. Messer, Joshua M. Duke, and Holly A. Michael. 2014. Strategic entry and externalities in groundwater resources: Evidence from the lab. *Resource and Energy Economics* 38:181-197
  22. Li, Jingyuan, Holly A. Michael, Joshua M. Duke, Kent D. Messer, Jordan F. Suter. 2014. Behavioral response to contamination risk information in a spatially explicit groundwater environment: Experimental evidence. *Water Resources Research* 50(8):6390–6405.
  23. Duke, Joshua M., Steven J. Dundas, Robert J. Johnston, and Kent D. Messer. 2014. Prioritizing Payment for Environmental Services: Using Nonmarket Benefits for Cost Effective Selection. *Ecological Economics* 105:319-329.
  24. Duke, Joshua M. 2014. Eminent domain and the land assembly problem. In *The Oxford Handbook of Land Economics*, ed. J.M. Duke and J. Wu. New York: Oxford University Press, 698-722.
  25. Duke, Joshua M., and JunJie Wu. 2014. Land as an integrating theme in economics. In *The Oxford Handbook of Land Economics*, ed. J.M. Duke and J. Wu. New York: Oxford University Press, 1-19.
  26. Duke, Joshua M., and JunJie Wu. 2014. Future research directions in land economics. In *The Oxford Handbook of Land Economics*, ed. J.M. Duke and J. Wu. New York: Oxford University Press, 723-35.

27. Messer, Kent D., Joshua M. Duke, and Lori Lynch. 2014. Applying experiments to land economics: Public information and auction efficiency in ecosystem service markets. In *The Oxford Handbook of Land Economics*, ed. J.M. Duke and J. Wu. New York: Oxford University Press, 481-510.
28. Schilling, Brian J., Kevin P. Sullivan, and Joshua M. Duke. 2013. Do residual development options increase preserved farmland values? *Journal of Agricultural and Resource Economics* 38(3):327-43.
29. Popkin, Jennifer H., Joshua M. Duke, Allison M. Borchers, Thomas Ilvento. 2013. Social costs from proximity to hydraulic fracturing in New York State. *Energy Policy*. 62:62-69.
30. Miller, Kate, and Joshua M. Duke. 2013. Additionality and water quality trading: Institutional analysis of nutrient trading in the Chesapeake Bay watershed. *Georgetown International Environmental Law Review*. Vol. 25(4):521-47.
31. Duke, Joshua M., Steven J. Dundas, Kent D. Messer. 2013. Cost-effective conservation planning: Lessons from economics. *Journal of Environmental Management* 125:126-133.
32. Arnold, Michael A., Joshua M. Duke, and Kent D. Messer. 2013. Adverse selection in reverse auctions for ecosystem services. *Land Economics* 89(3):387-412. (Senior authorship shared).
33. Duke, Joshua M. 2013. Property rights and the environment. Pp 75-79 in Volume 3 of *Encyclopedia of Energy, Natural Resources, and Environment*, ed. Jason Shogren.  
This chapter is also published in Elsevier's *Reference Module in Earth Systems and Environmental Sciences* available on-line: <http://dx.doi.org/10.1016/B978-0-12-375067-9.00104-2>.
34. Suter, Jordan F., Joshua M. Duke, Kent D. Messer, and Holly A. Michael. 2012. Behavior in a spatially-explicit groundwater resource: Evidence from the lab. *American Journal of Agricultural Economics* 94(5):1094-1112.
35. Duke, Joshua M., Allison M. Borchers, Robert J. Johnston, and Sarah Absetz. 2012. Sustainable agricultural management contracts: Using choice experiments to estimate the benefits of land preservation and conservation practices. *Ecological Economics* 74:95-103.
36. Borchers, Allison M. and Joshua M. Duke. 2012. Capitalization and proximity to agricultural and natural lands: Evidence from Delaware. *Journal of Environmental Management* 99:110-117.
37. Johnston, Robert J. and Joshua M. Duke. 2010. The importance of socioeconomic adjustments within choice experiment benefit function transfer: Is the common wisdom correct? *Resource and Energy Economics* 32(3):421-438.
38. Duke, Joshua M. and Robert J. Johnston. 2010. Nonmarket valuation of multifunctional farm and forest preservation, pp. 124-142 in *New Perspectives on Agri-Environmental Policies: A Multidisciplinary and Transatlantic Approach*, ed. Stephan J. Goetz and Floor Brouwer. New York: Routledge.
39. Klaus Moeltner, Robert J. Johnston, Randall S. Rosenberger, and Joshua M. Duke. 2009. Benefit transfer from multiple contingent experiments: A flexible two-step model combining individual choice data with community characteristics. *American Journal of Agricultural Economics* 91(5):1335-42 (Principal paper, not refereed).
40. Johnston, Robert J. and Joshua M. Duke. 2009. Informing preservation of multifunctional agriculture when primary research is unavailable: An application of Meta-Analysis. *American Journal of Agricultural Economics* 91(5):1353-59 (Principal paper, not refereed).
41. Johnston, Robert J. and Joshua M. Duke. 2009. Willingness to pay for land preservation across states and jurisdictional scale: Implications for benefit transfer. *Land Economics* 85(2):217-37.
42. Duke, Joshua M. and Titus O. Awokuse. 2009. Assessing the effect of bilateral collaborations on learning outcomes. *Applied Economic Perspectives & Policy* 31(2):344-358. Note: journal title at time was *Review of Agricultural Economics*.
43. Duke, Joshua M. 2008. Estimating amenity values: Will it improve farmland preservation policy? *Choices* 23(4-Fourth Quarter):11-15.
44. Johnston, Robert J. and Joshua M. Duke. 2008. Benefit transfer equivalence tests with non-normal distributions. *Environmental and Resource Economics* 41:1-23.
45. Duke, Joshua M. 2008. Private property land ownership rights in rural America. In *Encyclopedia of Rural America*, 2<sup>nd</sup>, Ed. G.A. Goreham, pp. 779-782.

46. Johnston, Robert J. and Joshua M. Duke. 2007. Willingness to pay for agricultural land preservation and policy process attributes: Does the method matter? *American Journal of Agricultural Economics* 89(4):1098-1115
47. Duke, Joshua M. and Lori Lynch. 2007. Gauging support for innovative farmland preservation techniques. *Policy Sciences* 40:123-55
48. Borchers, Allison M., Joshua M. Duke, and George R. Parsons. 2007. Does willingness to pay for green energy differ by source? *Energy Policy* 35:3327-34
49. Duke, Joshua M. and Lori Lynch. 2006. Four classes of farmland retention techniques: Comparative evaluation and property rights implications. *Land Economics* 82(2):189-213
50. Awokuse, Titus O. and Joshua M. Duke. 2006. The causal structure of land price determinants. *Canadian Journal of Agricultural Economics* 54(2):227-45
51. Aull-Hyde, Rhonda, Sevgi Erdogan, and Joshua M. Duke. 2006. An experiment on the consistency of aggregated comparison matrices in AHP. *European Journal of Operational Research* 171:290-95
52. Malcolm, Scott A., Joshua M. Duke, and John Mackenzie. 2005. Valuing rights of first refusal for farmland preservation policy. *Applied Economics Letters* 12:285-88
53. 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
54. 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):209-19
55. Duke, Joshua M. and Robert Ehemann. 2004. An application of water scarcity pricing with varying threshold, elasticity, and deficit. *Journal of Soil and Water Conservation* 59(2):59-65
56. Duke, Joshua M. 2004. Institutions and land-use conflicts: Harm, dispute processing, and transactions. *Journal of Economic Issues* 38(1):227-52
57. Duke, Joshua M., Eleonóra Marišová, Anna Bandlerová, and Jana Slovinska. 2004. Price repression in the Slovak agricultural land market. *Land Use Policy* 21(1):59-69
58. Duke, Joshua M. and Kristen A. Sentoff. 2003. Managing isolated wetlands after *Solid Waste and Tahoe: The case of Delaware*. *Journal of Land Use and Environmental Law* 18(2):355-76
59. Duke, Joshua M. and Laura A. Csoboth. 2003. Increased scientific capacity and endangered species management: Lessons from the red wolf conflict. *Drake Journal of Agricultural Law* 8(3):539-90
60. Duke, Joshua M. and Ryan P. Jost. 2003. Promoting mediation in property rights conflicts. *Land Economics* 79(1):29-37
61. Duke, Joshua M. and Scott A. Malcolm. 2003. Legal risk in agriculture: Right-to-farm laws and institutional change. *Agricultural Systems* 75(2-3):295-303
62. Duke, Joshua M. 2003. A web-based interface for student peer review, problem-based learning, and peer pressure. *Journal of Natural Resources and Life Sciences Education* 32:52-6
63. Duke, Joshua M., Robert W. Ehemann, and John Mackenzie. 2002. The distributional effects of water quantity management strategies: A spatial analysis. *The Review of Regional Studies* 32(1):19-35
64. Duke, Joshua M. and Rhonda Aull-Hyde. 2002. Identifying public preferences for land preservation using the analytic hierarchy process. *Ecological Economics* 42(1-2):131-45

***Manuscripts Currently under Review and other Select Manuscripts***

1. Duke, Joshua M., Jennifer M. Egan, Amy L. Shober. Policy Effectiveness When Water Quality Trading is Used with the Purchase of Ecosystem Services. Revise and resubmit at *Water Resources Research*.
2. Duke, Joshua M., Zhongyuan Liu, Jordan Suter, Kent Messer, Holly Michael. Some taxes are better than others: An economic experiment analyzing groundwater management in a spatially explicit aquifer. Under first review at *Water Resources Research*.
3. Duke, Joshua M., and TianHang Gao. Nudging Land Value Taxation: A Spatially Explicit Experiment with Endogenous Institutions.
4. Duke, Joshua M., John C. Bernard, and Gregory Vitz. Food labels for farmland preservation: Evidence from a field experiment.
5. Duke, Joshua M., Hongxing Liu, Tyler Monteith, Joshua McGrath, and Nicole Fiorellino. A new method for predicting participation in a performance-based water quality trading program. Under

first review at *Ecological Economics*.

- Duke, Joshua M. and Robert J. Johnston. Stated preference welfare estimates and quasi-public goods: Informing optimal provision when benefits may be capitalized.

### **GRANTS AND CONTRACTS (\$3,555,463)**

#### ***Under Review and Pending Competitive Grants and Contracts***

- Alabama Dept of Env'tl Mgmt., *Pepperell Branch Watershed Project*  
\$473,395, E. Brantley (PD), L. Bell, J. Duke, R. Thomson (Co-PDs), 2019 – 2021

#### ***Current Competitive Grants***

- Alabama Dept of Ag and Industries, *Statewide Marketing Campaign to Increase Consumer Awareness and Sales of Alabama Specialty Crops*  
\$35,000 (Auburn share), D. Wambles (PD), J. Helms, H. McBrayer, E. Watson, J. Duke, M. Runge (Co-PDs), 2019 – 2021
- USDA, NIFA, AFRI, *Targeted Conservation Contracts to Enhance Agricultural Best Management Practices: Incorporating Heterogeneity and Predicting Additionality*  
\$498,434, J. Duke (PD 2016-2019, CoPD 2019-2020), A. Shober (CoPD 2016-2019, PD 2019-2020), R. Johnston (Co-PD), Feb 1, 2016 - Jan. 31, 2021

#### ***Completed Competitive Grants (\$3,022,029)***

- Lincoln Institute of Land Policy, *An Experiment on the Public Acceptability, Efficiency, and Spatial Impacts of Land Value Taxation*  
\$28,000, J. Duke (PI), 2017-18
- USDA, AMS-FSMIP, *The Effect of Preservation Labeling on Local Food Marketing Premiums*  
\$87,261 (in external funds with additional 1:1 match), J. Duke (PD), J. Bernard (Co-PD), Sept 30, 2015 - Sept 29, 2017
- Lincoln Institute of Land Policy, *Public Acceptability and Land Value Taxation: An Experimental Economics Investigation*  
\$23,000, J. Duke (PD), 2016-17
- Summer Scholars (formerly, Social Science Scholars) Program  
\$3,500, J.M. Duke (PI), Tianhang Gao (Collaborator), X. Wang (Undergrad. Research Assistant),  
*Evidence on the Success of Land Value Taxation: A Synthesis and Preliminary Model*, 2016-17  
\$3,500, J.M. Duke (PI), I. Johnson (Undergrad. Research Assistant), *The Effect of Frag. on Ecological Servicing in Private Land Pres.*, 2003-04  
\$4,000, J.M. Duke (PI), S. O'Neill (Undergrad. Research Assistant), *Motivations in Agricultural Nuisance Conflicts*, 2003-04
- USDA-National Integrated Water Quality Program, *Water Quality and Ecosystem Services from Landscape Best Management Practices that Enhance Vegetation in Urbanizing Watersheds*  
\$595,000, S. Inamdar (PI), D. Tallamy, J. Bruck, S. Barton, J. Duke (Co-PIs), 2/2012-1/2016
- NSF-WSC-Category 1, *Water Sustainability in Coastal Environments: Exploratory Research for an Integrated Study of the Effect of Anticipated Sea Level Rise on Contaminated Site Risk*, 2012-14  
\$145,000, J. Duke (PI), D. Sparks, H. Michael, K. Messer (Co-PIs)
- USDA, AFRI, *Understanding the Appreciation of Preserved Farmland Values and Evaluating Policies to Enhance Farmers' Access to Preserved Farms*.  
\$500,000 (\$68,270 to UD), B.J. Schilling (PD); Project Leaders (Co-PIs): J.M. Duke, J.D. Esseks, L. Lynch; Senior Personnel: P.D. Gottlieb, L.J. Marxen, K.P. Sullivan, 2009-14
- NSF, *Collaborative Research: An Experimental Econ. Investigation of Groundwater Res. Dynamics*  
\$369,483, J. Suter (PI), K. Messer, H. Michael, J. Duke (co-PIs), 2010-14
- Mid-Atlantic Water Program, *Subaward for Delaware, Additionality and Best Management Practices in the Chesapeake Bay: Nutrient Trading*  
\$27,000, J. Duke (PI), 2012-13
- USDA-ERS, *Additionality and Incentive Problems in the TMDL and WIP Nutrient Trading Frameworks Being Developed for the Chesapeake Bay Watershed*  
\$24,000, J. Duke (PI), M. Ribauda (ERS Sponsor), 2011-13

14. Delaware Envl. Institute, *An Economic Analysis of the Visual Effects of Offshore Wind Projects* \$50,000, K. Messer (PI), J. Duke, G. Parsons, J. Johnson (co-PIs), 2011-13
15. USDA-ERS, *Amendment: Applying Economic Experiments to Improve the Design and Implementation of Conservation Programs* \$45,000 (plus UD match), K. Messer, M. Weinberg (PIs), J. Duke, D. Hellerstein, N. Higgins, L. Lynch (co-PIs), 2010-11
16. Del. Agric. Lands Pres. Found., *Exploring Ways to Ensure the Efficiency and Effectiveness of Delaware's Conservation Efforts* \$10,000. K.D. Messer (PI), J.M. Duke (co-PI), 2010-12
17. Delaware Dept. of Nat. Res. and Environmental Control, Economics of climate change mitigation Univ. of Delaware Consultancy, Engineering Firm, A. Michelson, R. Johnston, J. Duke (consultants), 2011-2012, awarded
18. USDA-ISE, *Sustainable Agriculture and Watershed Management in Developing Countries: Enhancing International Education, Research, and Extension Opportunities* \$123,506 (\$100,000 to UD, \$23,506 cost share), S.P. Inamdar (PI), T.O. Awokuse, J.M. Duke, D.J. Hansen, J.T. Sims (co-PIs), 2008-10.
19. *College of Business and Economics*, Experimental Economics and Conservation Auctions \$6,000, M. Arnold, J. Duke, K. Messer (PIs), 2008-09
20. USDA-ERS, *Applying Econ. Experiments to Improve the Design and Implementation of Cons. Programs* \$332,104 (\$132,601 to UD, \$93,879 to UMD, \$30,000 ERS cost share to UD, \$20,000 ERS cost share to UMD, \$36,480 UD match, \$19,144 UMD match), K. Messer, M. Weinberg (PIs), J. Duke, D. Hellerstein, N. Higgins, B. Kirwan, L. Lynch, M. Roberts (co-PIs), 2007-10  
Also involved in this research project:  
\$20,000 CANR Seed Grant, K. Messer (PI), J. Duke (co-PI)
21. USDA-NRCS-CIG, *Demonstrating Sust. Integration of Value-Added Manure Products into 21<sup>st</sup> Cent. Farming* \$427,536 (\$213,768 federal funds awarded, plus matches by UD and St. Andrew's), T. Sims (PD), J. McGrath, S. Barton, J. Duke, S. Inamdar, J. McDermott, J. Sparks, D. Tallamy, M. Hardesty, L. Ireland (Collaborators), 2006-09
22. Delaware Water Resources Center (*J.M. Duke is PI, UD Undergraduate Interns*)  
\$3,500, J.M. Duke (PI), C. Soriano (Undergrad. Research Assistant), *The Economics of Ecosystem Services*, 2018  
\$3,500, J. Egan (Collaborator), G. Robinson (Intern) *Procuring Abatement: Cover Crop Cost Heterogeneity and Optimal Policy Design in Delaware*, 2014-15  
\$3,500, M. Murray (Intern) *Sust. Mgt. of Water and Ecosystem Services on a Residential Landscape in Del.*, 2013-14  
\$3,500, T. Monteith (Intern), *The Returns to Best Management Practices: Evidence from Early Proposals for Nutrient Trading in the Chesapeake Bay Watershed*, 2012-13  
\$3,500, M. Ruppell (Intern), *Endangered Species on the Delaware River: Ecological, Economic and Institutional Concerns*, 2009-10  
\$3,500, A. Borchers (RA), S. Chatterson (Intern), *Willingness to Pay for Sustainable Agric. Practices in an Urbanizing Region*, 2007-08  
\$3,500, S. Mayer (Intern), *Benefit-Cost Analysis of Pelletized Broiler Litter in Agro. Crop Prod. & Turf Grass Mgt.*, 2007-08  
\$3,500, S.E. Hastings (co-PI), M. Loiacono (Intern), *The Impact of the Solid Waste Decision on Isolated Wetlands in Del.*, 2005-06  
\$3,500, R. Aull-Hyde (co-PI), M. Lee (Intern), *Landowner Perceptions of the Stringency of Water Quality Regulations in Del.*, 2005-06  
\$3,000, K. Sentoff (Intern), *Managing Wetlands in Delaware in a Changing Legal Environment*, 2002-03  
\$3,000, K.A. Lemon (Intern), *An Assessment of the Water Quantity Laws in Delaware*, 2001-02  
\$5,000, R.W. Ehemann (Intern), *Distributive Effects of Block Water Pricing in New Castle*