

Darrell Bosch

Professor

Department of Agricultural and Applied Economics, Virginia Tech

(540) 231-5265, bosch@vt.edu

Education and Training

Ph.D.	Agricultural Economics	University of Minnesota	1984
M.S.	Agricultural Economics	University of Tennessee	1980
B.A.	Political Science	Central College	1971

Research and Professional Experience

1999-present	Professor, Dept. of Agric. and Applied Econ., Virginia Tech.
1990-1999	Associate Professor, Dept. of Agric. and Applied Econ., Virginia Tech.
1984-1990	Assistant Professor, Department of Agric. and Applied Econ., Virginia Tech.
1980-1984	Research Assistant, Dept of Agric. and Applied Econ., Univ. of Minnesota.
1978-1980	Research Assistant, Dept. of Agric. Econ. and Rural Soc., Univ. of Tennessee.

Professional Activities

Scientific Contributions

Book chapters: 5; Refereed journal articles: 62; Conference proceedings articles: 15; Conference proceedings edited: 1; Peer reviewed journal abstracts: 17; Other abstracts: 7; Book reviews: 5; Invited presentations: 39

Teaching (2012-2021)

AAEC 3014 Analytical Methods in Applied Economics: 3 hrs (2012—2020)
AAEC 5114 Applied Microeconomic Theory: 3 hrs (2012—2015) (with Peterson)
AAEC 5104 Research Project Planning: 1 hr (2012-2022)
ALS/NR 4614 Watershed Assessment, Management, and Policy: 2 hrs (2012—2022) (with Schoenholtz, McGuire)
AAEC 3015 SANREM Ecuador Internship Program: 1 hr (2013 and 2022) (with Alwang, Norton, Chen, Laroche)

Advising

Major or Co-Major Advisor to 11 Ph.D. (10 completed) and 22 M.S. (21 completed) students.

Synergistic Activities

Advisor to Chesapeake Research Consortium optimization tool for water quality, 2016-2018.

Co-Editor, Journal of Agricultural and Applied Economics, 2010-2013 (with Mary Marchant)

Associate Editor, Journal of Soil and Water Conservation, 2009-2012

Program Chair, Integrated Decision-Making for Watershed Management Symposium:

Processes and Tools. Hosted by Virginia Tech in Chevy Chase, Md., January 7-9, 2001.

Editorial Council Member, Southern Journal of Agricultural Economics, 1990-1992.

Honors and Awards

Lifetime Achievement Award, Southern Agricultural Economics Association, 2018

Honorable Mention, Land, Water and Env. Econ. Section Outstanding Poster for “Costs of Meeting Water Quality Goals under Climate Change in Urbanizing Watersheds: Difficult

Run, Virginia” (with J. Giuffria, D. Taylor, and N. Alamdari) Agricultural and Applied Economics annual meeting, Boston, July 30-August 2, 2016.
Visiting Scholar at LAMETA (Institute of Applied and Theoretical Economics), Montpellier, France, January-July, 2008.
Agricultural and Resource Economics Review Outstanding Journal Article 2007 (with T. Metcalfe, J. Pease, M. Alley, and S. Phillips)
Soil and Water Conservation Society honorable mention for Best Journal of Soil and Water Conservation Feature Article, 1999 (with L. S. Van Dyke, J. W. Pease, and J. C. Baker).
Agricultural Economics Association of South Africa (AEASA) award for best published article in 1995 (with James H. F. Botes and L. Klopper Oosthuizen).
SSJ de Swart Award from AEASA for best published article in *Agrekon* in 1994 (with James H. F. Botes and L. Klopper Oosthuizen).
Visiting Scholar, Resources and Technology Division, Economic Research Service, U.S. Department of Agriculture, August 1992-July 1993.

Grants Received

Total Awards: \$16,206,275; PI/PD: \$463,553; Co-PI: \$15,742,722
Current: Thriving Agricultural Systems in Urbanized Landscapes with co-PI W. Thomason. USDA-NIFA via subcontract from Penn State U. (David Abler, PI). \$663,452
Agronomic, Post-harvest, and Economic Evaluation of Strawberry Cultivars in High Tunnel and Open Field Production. with co-PIs J. Samtani and T. Taghavi. USDA Specialty Crop Block Grant. \$59,070.

Collaborators and Affiliations (2018-2022)

Taghavi, T., Sample, D., Hanigan, M., Onufrieva, K., Samtani, Mbarushimana, J.C., Xu, Y., Wagena, M.B., Easton, Z.M., White, R., Thomason, W., Hu, Chenyang, Zhang, W. *Virginia Tech*; Collick, A.S. *U. Md., Eastern Shore*; Ball, W.J., Trommutter, M., *Chesapeake Research Consortium; Johns Hopkins U.*; Ellis, J.H., Hobbs, B., *Johns Hopkins U.*, McGarity, A.E., *Swarthmore U.*; Van Houtven, G.L., *RTI International*; Linker, L.C.; Kaufman, D.E., Shenk, G.W., Bhatt, G., Asplen, K.W., Devereux, O.H., Rigelman, *USEPA Chesapeake Bay Program*.

Selected Refereed Journal Publications (2013-2021)

* denotes former/current students

Kaufman, D.E., G.W. Shenk, G. Bhatt, K.W. Asplen, O.H. Devereux, J.R. Rigelman, J.H. Ellis, B.F. Hobbs, D.J. Bosch, G.L. Van Houtven, A.E. McGarity, L.C. Linker, W.P. Ball. 2021. Supporting More Cost-Effective Watershed Management Strategies for Chesapeake Bay with a Modeling and Optimization Framework. *Environmental Modelling and Software*. 144.105141 <https://doi.org/10.1016/j.envsoft.2021.105141>
Xu, Y. *, D.J. Bosch, M.B. Wagena, A.S. Collick, and Z.M. Easton. 2020. Reducing Nitrogen Control Costs by Within- and Cross-county Targeting. *Journal of Environmental Management*. 263(2020) 110333. <https://doi.org/10.1016/j.jenvman.2020.110333>
Xu, Y. *, D. J. Bosch, M.B. Wagena, A.S. Collick, and Z.M. Easton. 2019. Meeting Water Quality Goals by Spatial Targeting of Best Management Practices under Climate Change. *Environmental Management*. 63(2): 173-184. DOI: 10.1007/s00267-018-01133-8. <http://link.springer.com/article/10.1007/s00267-018-01133-8>
Bosch, D.J., M.B. Wagena, A.C. Ross, A.S. Collick, and Z.M. Easton. 2018. Meeting Water Quality Goals under Climate Change in Chesapeake Bay Watershed, USA. *Journal of the*

- American Water Resources Association. 1-19, <https://doi.org/10.1111/1752-1688.12684>.
- Cao, X.*, D.J. Bosch, and J.W. Pease. 2017. Recycling Irrigation Water on Ornamental Nursery Operations: Will Consumer Premiums Compensate for Growers' Costs? *HortScience*. 52(12) (December):1780–1789. doi: 10.21273/HORTSCI12125-17
- Giuffria, J.M.*, D.J. Bosch, D.B. Taylor, and N. Alamdari*. 2017. Costs of Water Quality Goals under Climate Change in Urbanizing Watersheds: Difficult Run, Virginia. *Journal of Water Resources Planning and Management* 143(9): 04017055 12 pp. 10.61/(ASCE)WR.1943-5452.0000782.
- Ferraro, N.*, D.J. Bosch, J.W. Pease, and J. S. Owen. 2017. Costs of Capturing and Recycling Irrigation Water in Container Nurseries. *HortScience* 52(23): 258-263.
- Pan, A., D.J. Bosch, and H. Ma. 2017. Assessing Water Poverty in China Using Holistic and Dynamic Principal Component Analysis. *Social Indicators Research* doi:10.1007/s11205-015-1191-3. URL <http://link.springer.com/article/10.1007/s11205-015-1191-3>
- Cultice, A.*, D. J. Bosch, J.W. Pease, K.J. Boyle, and W. Xu*. 2016. Horticultural Growers' Willingness to Adopt Recycling of Irrigation Water. *Journal of Agricultural and Applied Economics*. 48(1): 99-118.
- Tanellari, E.*, D. Bosch, K. Boyle, and E. Mykerezi*. 2015. On Consumers' Attitudes and Willingness to Pay for Improved Drinking Water Quality and Infrastructure. *Water Resources Research*. 51: 47–57, doi:10.1002/2013WR014934.
- D'Alessio, Nicole*, David Hartter, Kevin Boyle, Darrell Bosch, and James Pease (2015). Adding Value to Ornamental Plants. *American Nurseryman*. January 2015. pp 16-18.
- Bosch, Darrell, James Pease, Robert Wieland, and Doug Parker. Perverse Incentives with Pay for Performance: Cover Crops in the Chesapeake Bay Watershed. *Agricultural and Resource Economics Review*. 42:3 (December 2013): 491-507.
- Lee, J., E. Kleczyk, D. J. Bosch, A. M. Dietrich, V. K. Lohani, and G.V. Loganathan. Homeowners' Decisionmaking In A Premise Plumbing Failure-Prone Area. *Journal of American Water Works Association* 105(No. 5): May 2013: E236-E241. <https://doi.org/10.5942/jawwa.2013.105.0071>

Research Poster and Paper Presentations (2013-2022)

- *Mbarushimana, Jean Claude, Jayesh Samtani, Darrell Bosch. 2022. Agronomic and Economic Performance of Selected Strawberry Varieties Grown in the Open Field. Presentation to Southeast Regional Fruit and Vegetable Conference, January 6-9, 2022. Savannah, Georgia.
- Hu, Chenyang (Nate)*, Darrell Bosch, and Wei Zhang. 2022. Impact of Energy and Ethanol Price Shocks on U.S. Agriculture: A Partial Equilibrium Approach. Selected paper. Southern Agricultural and Applied Economics Association Annual Meeting, New Orleans, Louisiana, February 13-15.
- Hu, Chenyang (Nate)*, Darrell Bosch, and Wei Zhang. Impact of Energy Shocks on U.S. Agriculture: the REAP Model Approach. Selected paper. Agricultural and Applied Economics Association Annual Meeting, Austin Texas, August 1-3, 2021.
- Ebadi, Nasim*, Darrell J. Bosch, and Robin White. Estimating Costs of Reducing Environmental Emissions from a Dairy Farm: Multi-Objective Optimization versus Single Objective Constrained Optimization. Poster presentation at the Southern Agricultural Economics Association Annual Meeting, Louisville, Kentucky, February 1-4, 2020.

Collick, Amy S., Darrell Bosch, Yuelu Xu*, Moges B. Wagena., D. Liebe, Robin White, and Zach M. Easton. An Agro-ecosystem Model to Achieve Agricultural Sustainability for the Delmarva. 2019 DELMARVA Cooperative Seed Grant Program Summit, University of Delaware, March 7, 2019.

Xu, Yuelu*, and Darrell J. Bosch. Costs of Nitrogen Loading Reductions by Macro-farm Targeting Methods. Paper presented at the Southern Agricultural Economics Association Annual Meeting, Birmingham, Alabama, February 3-6, 2019.

Ebadi, Nasim*, Darrell J. Bosch, and Robin White. Trade-offs Among Increasing Farm Net Returns and Reducing Emissions of Nitrogen, Phosphorus, Greenhouse Gas Equivalents, and Ammonia In A Dairy Farm. Paper presented at the Southern Agricultural Economics Association Annual Meeting, Birmingham, Alabama, February 3-6, 2019.

Easton, Zachary, Raymond Najjar, Ming Li, David Sample, Darrell Bosch, Moges Berbera, Andrew Ross*, Wenfei Ni, Nasrin Alamdari*, Jonathon Giuffria*. WSC-Cat 1: Coupled Multi-scale Economic, Hydrologic, and Estuarine Modeling to Assess the Impacts of Climate Change on Water Quality. National Science Foundation, Water Sustainability, and Climate Conference. Arlington, Virginia, January 29, 2018.

Bosch, Darrell. 2018. Interdisciplinary Research: Vital to the Agricultural and Applied Economics Profession. Lifetime achievement award talk, SAEA Annual Meeting, Jacksonville, Florida. February 4-6, 2018

Bosch, Darrell, Amy Collick, Robin White, and Zach Easton. 2017. An Agro-ecosystem Model to Achieve Agricultural Sustainability for the Delmarva. Lightning Presentation, 2017 Delmarva Cooperative Seed Grant Program Summit. University of Maryland Eastern Shore. Princess Anne, MD. December 13.

Cao, Xiang*, Darrell J. Bosch, James W. Pease. 2017. Recycling Irrigation Water on Ornamental Nursery Operations: Will Consumer Premiums Compensate for Grower Adoption Costs? Poster selected for presentation at the Annual Meeting of the Agricultural and Applied Economics Association, July 30-August 1, 2017, Chicago, Illinois.

Giuffria, Jonathon*, Darrell J. Bosch, Daniel Taylor, and Nasrin Alamdari*. "Costs of Meeting Water Quality Goals under Climate Change in Urbanizing Watersheds: Difficult Run, Virginia. Poster presented at AAEA Annual Meeting, Boston, MA July 30-August 1-2, 2016.

Bosch, Darrell J., Moges Wagena, and Zach Easton. "Meeting Water Quality Goals for Agriculture under Climate Change." The Batsheva de Rothschild Workshop on Climate Changes and their Effect on Agriculture, Economics and the Environment. June 20-21, 2016. Rehovot, Israel.

Easton, Zachary, Ray Najjar, Ming Li, David Sample, Darrell Bosch, Moges Wagena, Nasrin Alamdari*, Jonathon Giuffria*, Andrew Ross*, Wenfei Ni. "WSC-Cat 1: Coupled Multi-scale

Modeling to Assess Impacts of Climate Change on Water Quality Management ." NSF Water Sustainability and Climate PI Meeting, Arlington, Virginia. March 9, 2016.

Bosch, Darrell J., Zach Easton and Moges Wagena. "Meeting Water Quality Goals Under Climate Change in Mahantango Watershed." Presentation to "Cracking the WIP" Designing an Optimization Engine to Guide Efficient Bay Implementation. Workshop sponsored by the Chesapeake Bay Scientific and Technical Advisory Committee, February 17-18, 2016, Annapolis Maryland.

Bosch, Darrell, Jim Pease, Kevin Boyle, Nicole D'Alessio*, Nate Ferraro, Xiang Cao. "Irrigation Pathogens and Water Quality: Economics Team Project Update" March 2015. SCRI Project Annual Meeting, Virginia Beach, VA.

Easton, Zachary, David Sample, Darrell Bosch, Ray Najjar, and Ming Li. "Coupled Multi-scale Modeling to Assess Impacts of Climate Change on Water Quality and Management in the Chesapeake Bay." NSF Water Sustainability and Climate PI Meeting, Arlington, Virginia, January, 2015.

Kong, P., P. A. Richardson, Xiao Yang, H. B. Zhang, S.R. Ghimire, G. W. Moorman, J. Lea-Cox, W. Copes, D. S. Ross, A. Ristvey, K. Boyle, D. Bosch, J. Pease, and C. X. Hong. "Building Crop Health into Water Recycling Systems." The 18th International Plant Protection Congress, Berlinsd, Germany, August 24 to 27, 2015.

Bosch, Darrell, Zachary Easton, and Moges Wagena. "Meeting Water Quality Goals Under Climate Change in Mahantango Watershed." Presentation to Joint meeting of NSF WSC1 and WSC3 project investigators. Annapolis, Maryland, December 9, 2015.

Ferraro, Nathaniel*, Darrell Bosch, and James Pease. "Economic analysis of recapturing and recycling irrigation on container horticultural nurseries." Southern Nursery Growers' Association. Atlanta, Georgia. July 21, 2015.

Boyle, Kevin, David Hartter*, James Pease, Darrell Bosch, and Weibin Xu*. 2014. "Consumer Preferences for Ornamental Plants Grown with Water Conservation Practices." Invited paper, Annual Meeting, Agricultural and Applied Economics Association, Minneapolis, MN.

Hartter, D*., K. Boyle, J. Pease, D. Bosch, A. D'Alessio* and C. X. Hong. 2014. Understanding consumer preferences for ornamental plants with disease-free and water conservation labels. Held on November 4, 2014 and recording posted at <https://connect.extension.iastate.edu/p4wiyfsyslr/>

Pease, James, Darrell Bosch, Kevin Boyle, Gwen Rees*, Nicole D'Alessio*, Weibin Xu* Irrigation Pathogens and Water Quality: Economics Team Project Update Nov. 13-14, 2013. SCRI Project Bi-annual Meeting, Virginia Beach, VA.

Alyssa Cultice*, Darrell Bosch, James Pease, and Kevin Boyle. Horticultural Producers' Willingness to Adopt Water Recirculation Technology. Paper presented at the Agricultural and

Applied Economics and Canadian Agricultural Economics Society Annual Meeting,
Washington, DC, August 4-6, 2013.