Amy L. Shober

Professor and Extension Specialist
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(a) Professional Preparation

Virginia Polytechnic Institute & State University; Blacksburg, VA; Chemistry B.A. 1998
Virginia Polytechnic Institute & State University; Blacksburg, VA; Environmental Science B.S. 1998
Pennsylvania State University; University Park, PA; Soil Science M.S. 2002
University of Delaware; Newark, DE; Plant and Soil Sciences Ph.D. 2006

(b) Appointments

Associate Chair, Department of Plant and Soil Sciences, University of Delaware, 2020-present

Director, Graduate Programs, Department of Plant and Soil Sciences, University of Delaware, 2021-present

Co-Director, Center for Food Systems and Sustainability, University of Delaware, 2017-present

Professor and Extension Specialist, Department of Plant and Soil Sciences, University of Delaware, 2019-present

Associate Professor and Extension Specialist, Department of Plant and Soil Sciences, University of Delaware, 2014-2019

Assistant Professor and Extension Specialist, Department of Plant and Soil Sciences, University of Delaware, 2012-2014

Associate Professor and Extension Specialist, Soil and Water Science Department, Gulf Coast Research and Education Center, University of Florida, 2011-2012

Assistant Professor and Extension Specialist, Soil and Water Science Department, Gulf Coast Research and Education Center, University of Florida, 2006-2011

(c) Publications

Selected Refereed Journal Articles (55 total since 2003)

1. Reike, E. L. Bagnall, D. K., Morgan, C. L. S., Flynn, K. D., Howe, J. A., Greub, K. L. H., Mac Bean, G., …Shober, A.L. …Wayne Honeycutt. (2022). Evaluation of aggregate stability methods for soil health. *Geoderma*, *428*, 116156. https://doi.org/10.1016/j.geoderma.2022.116156.

2. Lucas, E. R., Mosesso, L. R., Roswell, T., Yang, Y., Scheckel, K., Shober, A. L. & Toor, G. S. (2022). X-ray absorption near edge structure spectroscopy reveals phosphate minerals in agricultural soils saturated with legacy phosphorus. *Chemosphere*, *308*, 136288. https://doi.org/10.1016/j.chemosphere.2022.136288

3. Kleinman, P. J. A., Osmond, D. O., Christianson, L. E., Flatten, D. N., Ippolito, J. A., Jarvie, H. P., Kaye, J. P., King, K. W., Leytem, A. B., McGrath, J. M., Nelson, N. O., Shober, A. L., Smith, D. R., Staver, K. W., & Sharpley, A. N. (2022). Addressing conservation practice limitations and tradeoffs for reducing phosphorus loss from agricultural fields. *Agricultural & Environmental Letters. Agricultural & Environmental Letters, 7,* e20084. https://doi.org/10.1002/ael2.20084
4. Miller, J. O., Shober, A. L., & VanGessel, M. J. (2022). Post-harvest drone flights to measure weed growth and yield associations. *Agricultural & Environmental Letters, 7*, e20081. https://doi.org/10.1002/ael2.20081
5. Liptzin, D., Norris, C. E., Cappellazzi, S. B., Mac Bean, G., Cope, M., Greub, K. L. H., Rieke, E. L. … Shober, A.L. … Honeycutt, W. (2022). An evaluation of carbon indicators of soil health in long-term agricultural experiments, *Soil Biology and Biochemistry, 172,* 108708. https://doi.org/10.1016/j.soilbio.2022.108708
6. Rieke, E.L., Cappellazzi, S.B., Cope, M., Liptzin, D., Mac Bean, G., Greub, K.L.H. … Shober, A.L. … Honeycutt, C. W. (2022). Linking soil microbial community structure to potential carbon mineralization: A continental scale assessment of reduced tillage. *Soil Biology and Biochemistry, 168,* 108618. https://doi.org/10.1016/j.soilbio.2022.108618
7. Duke, J. M., Johnston, R. L. Shober, A. L. & Lui, Z. (2022). Barriers to cover crop adoption: Evidence from parallel surveys in Maryland and Ohio. *Journal of Soil and Water Conservation, 77,* 198–211. https://doi.org/10.2489/jswc.2022.00062
8. Duke, J. M., Johnston, R. L. Shober, A. L. & Lui, Z. (2022). Improving targeting of farmers for enrollment in agri-environmental programs. *Applied Economic Perspectives & Policy*, 1–25. https://doi.org/10.1002/aepp.13227
9. Slaton, N. A., Lyons, S. E., Osmond, D. L., Brouder, S. M., Culman, S. W., Drescher, G., Gatiboni, L. C., Hoben, J., Kleinman, P. J. A., McGrath, J. M., Miller, R. O., Pearce, A., Shober, A. L., Spargo, J. T., & Volenec, J. J. (2022). Minimum dataset and metadata guidelines for soil-test correlation and calibration research. *Soil Science Society of America Journal, 86*(1), 19-33. https://doi.org/10.1002/saj2.20338
10. Bagnall, D. K., Morgan, C. L. S., Mac Bean, G., Liptzin, D., Cappellazzi, S. B., Cope, M., … Shober, A. L. … Honeycutt, C. W. (2022). Selecting soil hydraulic properties as indicators of soil health: Measurement response to management and site characteristics. *Soil Science Society of America Journal, 86,* 1206-1226. https://doi.org/10.1002/saj2.20428
11. Mosesso, L. R., Buda, A., Collick, A., Kennedy, C., Folmar, G., & Shober, A. (2021). Examining sources and pathways of phosphorus transfer in a ditch-drained field. *Journal of Environmental Quality*, *50*(3), 680– 693. https://doi.org/10.1002/jeq2.20226
12. Fiorellino, N. M., Kratochvil, R. J., Shober, A. L., & Coale, F. J. (2021). Is starter phosphorus fertilizer necessary for corn grown on Atlantic Coastal Plain soils? *Agrosystems Geosciences & Environment*, *4*(1), 1−8. https://doi.org/10.1002/agg2.20139
13. Robinson, J., Buda, A., Collick, A., Shober, A., Ntarlagiannis, D., Bryant, R., Folmar, G., Andres, A. S. & Slater, L. (2020). Electrical monitoring of saline tracers to reveal subsurface flow pathways in a flat ditch-drained field. *Journal of Hydrology, 586,* 124862. https://doi.org/10.1016/j.jhydrol.2020.124862

14. Duncan, E. W., Osmond, D. L., Shober, A. L., Starr, L., Tomlinson, P., Kovar, J. L., Moorman, T. B., Peterson, H. M., Fiorellino, N. M. & Reid, K. (2019). Phosphorus and soil health management practices. *Agricultural & Environmental Letters, 4*, 190014. https://doi.org/10.2134/ael2019.04.0014 - *Awarded A&EL Best Paper 2021*
15. Osmond, D. L., Shober, A. L., Sharpley, A. N., Duncan, E. W. & Hoag, D. L. K. (2019). Increasing the effectiveness and adoption of agricultural phosphorus management strategies to minimize water quality impairment. *Journal of Environmental Quality*, *48*(5), 1204−1217. https://doi.org/10.2134/jeq2019.03.0114
16. Qin, Z., & Shober, A. (2018). The challenges of managing legacy phosphorus losses from manure-impacted agricultural soils. *Current Pollution Reports, 4*, 265–276. https://doi.org/10.1007/s40726-018-0100-1
17. Qin, Z., Shober, A. L., Scheckel, K. G., Penn, C. J. & Turner, K. C. (2018). Mechanisms of phosphorus removal by phosphorus sorbing materials. *Journal of Environmental Quality, 47*, 1232−1241. https://doi.org/10.2134/jeq2018.02.0064
18. Wyngaard, N., Cabrera, M. L., Shober, A. & Kanwar, R. (2018). Fertilization strategy can affect the estimation of soil nitrogen mineralization potential with chemical methods. *Plant Soil*, *432*, 75–89. https://doi.org/10.1007/s11104-018-3786-3
19. Zhang, T. Q., Zheng, Z. M., Lal, R., Lin, Z. Q., Sharpley, A. N., Shober, A. L., Smith, D., Tan, C. S. & Van Cappellen, P. (2018). Environmental indicator principium with case references to agricultural soil, water, and air quality and model-derived indicators. *Journal of Environmental Quality, 47*, 191−202. https://doi.org/10.2134/jeq2017.10.0398
20. Shober, A. L., Buda, A. R., Turner, K. C., Fiorellino, N. M., Andres, A. S., McGrath, J. M. & Sims, J. T. (2017). Assessing Coastal Plain risk indices for subsurface phosphorus loss. *Journal of Environmental Quality, 46*, 1270−1286. https://doi.org/10.2134/jeq2017.03.0102
21. Shober, A. L., A.K. Koeser, A.K., McLean, D.C., Hasing, G. & Moore, K. A. (2017). Nitrogen fertilizer rate, timing, and application method affects growth of sweet viburnum and nitrogen leaching from simulated planting beds. *HortScience*, *52*, 146–153. https://doi.org/10.21273/hortsci11114-16

Peer-reviewed Extension Fact Sheets (54 total; UD only listed)

1. Shober, A.L., K.L. Gartley, and J.T. Sims. 2019. Measurement and management of soil pH for crop production in Delaware. University of Delaware, Newark, DE.
2. Shober, A.L., K.L. Gartley, and J.T. Sims. 2019. Calculating the lime recommendation using the Adams-Evans Soil buffer. University of Delaware, Newark, DE.
3. Riggi, S.Y., G. Cartanza, and A.L. Shober. 2018. Temporary mortality management on new poultry farms. University of Delaware, Newark, DE.
4. Shober, A.L. and G.C. Denny. 2017. Identifying nutrient deficiencies in ornamental plants. University of Delaware, Newark, DE.
5. Taylor, R.W., K.L. Gartley, A.L. Shober, and J.T. Sims. 2017. Nutrient management recommendations - Forage and hay crops. University of Delaware, Newark, DE.

6. Shober, A.L. and R. Rothweiler. 2016. Basic tips for using the web soil survey to retrieve information for nutrient management planning. University of Delaware, Newark, DE.
7. Sims, J.T., A.L. Shober, K.L. Clark, A.B. Leytem, and F.J. Coale. 2016. The Delaware phosphorus site index technical guidance manual. University of Delaware, Newark, DE.
8. Shober, A.L. and R.W. Taylor. 2016. Estimating yield goal for crops. University of Delaware, Newark, DE.
9. Shober, A.L. 2015. Phosphorus cycling in agriculture. University of Delaware, Newark, DE.
10. Shober, A.L. 2015. Nitrogen cycling in agriculture. University of Delaware, Newark, DE.
11. Shober, A.L. 2015. Delaware gardener's guide to lawn and landscape fertilizers. University of Delaware, Newark, DE.
12. Shober, A.L., S. Riggi, and R. Rothweiler. 2015. Temporary field storage of poultry litter. University of Delaware, Newark, DE.
13. Shober, A.L., C. Wiese, and G.C. Denny. 2015. Delaware gardener's guide to soil pH. University of Delaware, Newark, DE.
14. Shober, A.L. and R. W. Taylor. 2014. Nitrogen management for soybean. University of Delaware, Newark, DE.
15. Shober, A.L. and S.Y. Riggi. 2013. Understanding the requirements of the Delaware nutrient management act. University of Delaware, Newark, DE.
16. Shober, A.L., K.L. Gartley, and J.T. Sims. 2013. Nitrogen management for corn in Delaware: The pre-sidedress nitrate test. University of Delaware, Newark, DE.
17. Shober, A.L. 2013. Nitrogen removal by Delaware crops. University of Delaware, Newark, DE.
18. Shober, A.L. 2013. Defining high phosphorus soils in Delaware. University of Delaware, Newark, DE.
19. Shober, A.L., J.T. Sims, and K.L. Gartley. 2013. Interpreting soil phosphorus and potassium tests. University of Delaware, Newark, DE.
20. Shober, A.L. and J.T. Sims. 2013. Soil management options based on the phosphorus site index. University of Delaware, Newark, DE.
21. Shober, A.L., J.T. Sims, and A.B. Leytem. 2013. Phosphorus management strategies for Delaware's agricultural soils: The phosphorus site index. University of Delaware, Newark, DE.
22. Shober, A.L., J.T. Sims, and J.L. Walls. 2012. Phosphorus removal by Delaware crops. University of Delaware, Newark, DE.

(d) Grants and Contracts Awarded (Active only)

Total funds awarded to my program = $2,976,906 (PI); $1,367,267 (Co-PI)
Total value of all awards = $3,356,232 (PI); $6,274,634 (Co-PI)

1. Improving K fertilizer recommendations for corn on the Delmarva Peninsula (PI). 2021. Grant value: $6,841. Funding agency: Maryland Grain Producers Utilization Board.

2. Mapping and alleviating coastal salinity in agricultural fields using apparent electrical conductivity (Co-PI). 2022. Grant value: $299,921. Funding Agency: USDA-AFRI Foundational Critical Agriculture Research and Extension (CARE) Program.
3. FRST K Rate Trials (PI). 2021. Grant Value: $5,000. Funding Agency: North Carolina State University.
4. A Solutions-based Evaluation of Barriers to Farmer Adoption of In-season Nitrogen Decision Support Tools (Co-PI). 2020-2025. Grant value: $207,980 ($1,607,099 total). Funding agency: USDA-NRCS Conservation Innovation Grant On-Farm Research Program.
5. Enhancing Site Assessments of Agricultural Subsurface Loss Using Geophysical Surveys and Conservative Tracers (PI). 2019-2022. Grant value: $294,966 ($489,999 total). Funding agency: USDA-NIFA Agricultural Food and Research Initiative (AFRI) Foundational and Applied Science Program.
6. Innovative Manure Management Strategies to Promote Phosphorus Balance and Sustain Agriculture on the Delmarva Peninsula (Co-PI). 2018-2022. Grant Value: $123,851 ($300,000 total). Funding agency: USDA Agricultural Food and Research Initiative (AFRI) Foundational Critical Agriculture Research and Extension (CARE) Program.
7. UD Center for Food Systems and Sustainability: Integrating Research, Education, and Outreach (PI). 2017-2022. Grant Value: $601,000. Funding Agency: UNIDEL Foundation.
8. Targeted Conservation Contracts to Enhance Agricultural Best Management Practices:
9. Trends in Soil Test Phosphorus and Sorption Capacity following Long-term Application of Poultry Litter and Commercial Fertilizers (PI). 2014-2022. Grant value: $80,645. Funding agency: Maryland Grain Producers Utilization Board.
10. Nutrient Management Education Program (PI). FY 2013-2022. Grant Value: $1,470,845. Funding agency: Delaware Nutrient Management Commission.

(e) Extension/Outreach Education (UD only listed)

- Delaware Nutrient Management Certification Sessions (139)
- Presentations at clientele training events organized by Cooperative Extension (45)
- Presentations at clientele training events organized by state agencies, associations, commodity groups, or private industry (47)
- Extension newsletters and articles (55)

(g) Student Advising

- Major advisor for 2 PhD and 8 MS students at University of Delaware
- Major advisor for 8 MS students at University of Florida
- Committee member for 7 PhD and 9 MS students at University of Delaware
- Committee member for 2 PhD and 5 MS students at University of Florida
- Advisor for 4 undergraduate interns and student theses at University of Delaware

(f) Synergistic Activities

Cooperative Extension (University of Delaware)

Delaware Nutrient Management Extension Team (Leader): The team develops and delivers high-impact, science-based nutrient management educational outputs to support the state-mandated nutrient management certification program.

Mid Atlantic Crop Management School (Current co-chairperson/presenter): This 2.5-day school is held annually to provide continuing education in support of the International Certified Crop Adviser and state nutrient management and pesticide certification programs. More than 250 agribusiness professionals, extension educators, and state agency personnel attend annually.

Extension Committee on Policy (ECOP) Program Action Team on Climate (2021-present)

Service to the Scientific Professional Societies
American Society of Agronomy (ASA)

- Board representative – Environmental Quality Section (2019-present)
- Annual meeting symposium organizer – Extension Education Community (2014-2015)
- Associate editor – Journal of Environmental Quality (2010-2015)
- Chair - Nutrient Loss and Assessment Community (2012-2013)
- Vice chair – Nutrient Loss and Assessment Community (2010-2012)
- Chair - Graduate School Workshop Committee (2008-2010)
- Member – Graduate School Workshop Committee (2006-2008)

Soil Science Society of America (SSSA)

- Associate Editor – Soil Science Society of America Journal (2020-present)
- Marion & Chrystie Jackson Soil Science Award Committee chair (2010)

Multi-state Workgroup Activities
Mid-Atlantic Soil Testing and Plant Analysis Workgroup (Chair, 2016-2018)

Fertilizer Recommendation Support Tool (Member, 2019-present): National effort to "promote clear and consistent interpretation of fertilizer recommendations (http://www.soiltestfrst.org/)

Southern Extension Research Activity (SERA-17) – Organization to Minimize Nutrient Loss from the Landscape: Multi-state workgroup is a resource for research and extension on issues related to agricultural nutrient management and water quality

- Past chair (2018)
- Chair (2017)
- Incoming chair (2016)
- Annual meeting organizer (2011)
- Best management practice workgroup member (2007-present)
- Soil/manure testing workgroup member (2003-2007)

(g) Awards and Honors
Soil Science Education and Extension Award, Soil Science Society of America (2022)

Best Paper Award, Agricultural & Environmental Letters (2021)

Inspiring Young Scientist Award, American Society of Agronomy Environmental Quality Section (2011)

Ornamental, Garden & Landscape Best Paper Award, Florida State Horticultural Society (2010)

Editor's Citation for Excellence in Manuscript Review, Journal of Environmental Quality (2008)

Presidential Management Fellowship Finalist, US Office of Personnel Management (2006)

Outstanding Graduate Student Award, Northeastern Branch CSA Society (2006)

J. Fielding Reed/Potash and Phosphate Institute (PPI) Fellowship (2005)

Hazel Burgett Endowed Philanthropic Education Organization (PEO) Scholar Award (2004)

Outstanding Graduate Student Presentation, 2nd place, Northeastern Branch CSA Meeting (2004)

Institute of Soil and Environmental Quality Ph. D. Fellowship Recipient (2002 – 2005)

Gerald T. Gentry Award for Excellence in Graduate Research, Penn State University (2002)

Outstanding Graduate Student Presentation, 3rd place, Northeastern Branch CSA Meeting (2002)