

# CURRICULUM VITA

ARTHUR L. ALLEN, PHD | PROFESSOR



## I. Education:

- A. Bachelor of Science, major: Agronomy, Minor: Chemistry, 1966, University of Arkansas at Pine Bluff
- B. Masters' of Science, major: Agronomy, Minor: Soil Chemistry, 1968, Oklahoma State University
- C. Doctor of Philosophy, Major: Soil Chemistry, Minor: Plant Physiology & Plant Biochemistry, 1971, University of Illinois–Urbana.

## II. Professional Experiences & Scholarly Activities:

- A. **Langston University**; Associate Professor, 1971–1974
- B. **Alabama A&M University**, Associate Professor- 1974 –1978
- C. **University of Arkansas-Pine Bluff**, Research Director/Extension Administrator/Tenured Professor-Division of Agriculture and Technology, 1978-1989. 1989-1990, Deputy Research Director, respectively.
- D. **Virginia State University**; 1990-1994 Dean, School of Agriculture and Applied Sciences Deputy Research Director; Tenured Professor, Department of Agriculture; 1994–1996
- E. **University of Maryland Eastern Shore**; Chairman, Department of Agriculture, 1996-2000; Associate Tenured Professor, Associate Research Director, and Center Director- Geospatial Information Sciences Technologies. 1996-2013'.
- F. **Academics - Outputs, Outcomes & Impacts:**
  - a. Achieved **3-year National Accreditation** in 1991- Engineering Technology Program - **VSU**
  - b. Achieved **10 year National Accreditation** -Department of Human Ecology (institutional dietetics) - **VSU**
  - c. Achieved **NCATE Accreditation**- Department of Industrial Education and Technology - **VSU**
  - d. Developed **eight new courses** at UAPB, VSU and UMES campuses
  - e. Developed the University-Wide GIS laboratory (with assistance from Dr. Carolyn Brooks). Acquired funding from USDA and UMES Title III totaling in excess of **\$1.5 Million - UMES**
  - f. Served on 21 graduate M.S. and Ph.D. student committees, advised 5 graduate students (4 M.S. & 1 Ph.D.), and provided all year-round research internships for approximately 50 or more undergraduate students via grant acquisitions

### Graduate advisees and Graduate Committee Service:

1. Alieu Salah- Masters'- Major Adviser
2. Leo Kibet- Masters' –Major Adviser; Joint with Eric May for Ph.D.
3. Savona Barnes- Masters'- Major Adviser
4. Keisha Johnson- Masters'- Major Adviser
5. Nancy Chepketer-Masters'- Major Adviser
6. Senorpe Asem-Hiablie - Masters'-Committee Member
7. Francis Orech – Ph.D.- Committee Member
8. Bashiru A. Balogun – Ph.D.- Committee Member
9. Lucian Mitran- Ph.D.- Committee Member
10. Michael Bonsteel-Masters'- Committee Member
11. Jennifer Timmons-Ph.D.- Committee Member
12. Carolyn white- Master's- Committee Member
13. Kenneth Karango- Masters'- Committee Member
14. Sam Mwangi-Master's- Committee Member
15. Dana McNair- Masters'- Committee Member
16. Tracie Bishop-Ph.D.- Committee Member
17. Mark James- Masters'- Committee Member

### **Students that I Provided Research Internships and Partial or full Assistantships**

1. Dana McNair- Undergraduate & Masters
2. Tracie Bishop-PhD.
3. Alieu Salah- Undergraduate & Master's
4. Leo Kibet- Undergraduate, Master's & PhD.
5. Savona Barnes- Master's
6. Keisha Johnson- Master's
7. Senorpe Asem-Hiablle- Master's
8. Katherine Katambo- Undergraduate
9. Michael Bonsteel- Master's
10. Betty Chumbe- Undergraduate & Master's
11. Ian Battoine- Undergraduate
12. Peter Sang- Undergraduate
13. Eyen Edema- Undergraduate
14. Shadrack Martim- Undergraduate
15. Nancy Chepketer- Undergraduate & Master's
16. Margo Wright- Undergraduate
17. Amon kiprotich-Undergraduate

### **G. Research Outputs, Outcomes & Impacts:**

#### **Director-1890 Agricultural Programs. UAPB- Outputs, Outcomes & Impacts; 1982–1989**

- a. **Deputy Research Director- 1890 Agricultural Programs**, Managed a \$1.5 million yearly budget, supervised an accountant, several researchers, two secretaries, and an Assistant Research Director. **1990-1994, VSU.**
- b. **Associate Research Director-1890 Agricultural Programs. UAPB 1996-2013**
  - Received a record \$4.5 Million in Capacity Grant funds in 2010. Of that amount, my collaborative partners and I received **\$3.1 million** (included a \$1- Million match).

#### **H. Extension Administrator-Outputs, Outcomes & Impacts: Extension Administrator, 1982–1989, UAPB**

- a. Provided administrative leadership for the Cooperative Extension Service which included specialists and support staff of **42** persons, and managed an annual **\$1.6 million** dollar budget formula appropriated by USDA.
- b. Received state and national recognition for a teen pregnancy abatement program in Southeast Arkansas which was adopted by approximately **15 other states**. As a result, UAPB extension specialist, Dr. Irene Lee, received **USDA Secretary of Agriculture's Outstanding Achievement Award in 1998**.
- c. Provided leadership for the establishment of the first 2 diagnostic labs for fish farmers for the State of Arkansas.
- d. **Seventy-six extension** publications were generated under my leadership. Prior to 1982 there were very few, if any, publications generated.

#### **I. International Programs Director- *Outputs, Outcomes and Impacts*, UAPB-1979-1983**

- a. Coordinated all aspects of the UAPB Office of International Programs.
- b. Received funding for a Title XII University Strengthening Grant proposal which initiated the UAPB International Agricultural Program. South East Consortium for International Development (SECID).1981. **\$500,000**.
- c. Received a follow-up program support grant (**\$275,000**) in 1983 for SECID, and served on the Board of Directors of SECID from 1981-1983.

### **III. Grants, Awards and Honors:**

#### **A. Selected Teaching Grants:**

1. Natural Resources and Urban Management: A joint degree option. USDA Capacity Building Grant. 1997. Principal investigator. **\$192,000**;
2. Irrigation Studies with Soybeans in Southeast Arkansas (SEA/CR-USDA). 1984. Principal investigator. **\$156,000**;
3. Localization and Quantization of Foliar Applied Nutrients in Various Soybean Cultivars (SEA/CR). 1978. Principal investigator. **\$160,000**;
4. Internships for College Students in Agriculture, History and Political Science, University Year for Action Grant funded by NSF Action Program. Co-developer. **\$340,000**;
5. Persistence Towards' Excellence, USDA Capacity Building Grant. Principal investigator. 1992. **\$375,000**;
6. Establishment of a GIS training facility at the University of Maryland Eastern Shore-*Phase-I*. Principal investigator.

2002. Title III. **\$181,000**;
7. Establishing a (GIS/GPS) Technology Training Center for Minority and other Student Audiences-Phase II, USDA Capacity Grant, 2003. Principal investigator. **\$198, 567**;
  8. UMES Reference Collection of Fish Diversity, USDA Capacity Building Grant, 2006, Co-Investigator. **\$167, 896**;
  9. Geospatial Information Technology Use in Water Quality Management: Internships for Minority and other Audiences. 2006. USDA Capacity Building Grant. **\$199,960**;
  10. Establishment of a Living Marine Resource Science Cooperative Center. NOAA. Co-developer. **\$5 million**;
  11. Geospatial Information Technology Use in Water Quality Management: Internships for Minority and Other Audiences. 2006. Principal Investigator. USDA Capacity Building Grant. **\$165,587**;
  12. Science and Technology-Based Literacy Training among Youth and Communities on Maryland's Eastern Shore. 2012. Principal investigator. USDA Capacity Building Grant. **\$349,990**;
  13. Geospatial Information Technology Infrastructure Enhancement. USDA Capacity Building Grant. Principal investigator. 2004, **\$195,078**;
  14. Natural Resources and Urban Management: A joint degree option. USDA Capacity Building Grant. 1997. Principal investigator. **\$192,000**;
  15. USDA Capacity Building Grant. Principal investigator. **\$299, 651**; Science and Technology-Based literacy Training among Youth and Communities on Maryland's Eastern Shore. USDA Capacity Grant. 2012. Principal investigator. **\$349,567**, and
  16. Geospatial Information Technology Infrastructure Enhancement, USDA Capacity Building Grant. 2004. Principal investigator. **\$195,078**

#### **B. Selected Research Grants:**

1. Effect of Best Management Practices on Nutrient Pathways in the Manokin River Basin. 2001. USDA Capacity Building Grant. Principal Investigator. **\$369,567**;
2. Establishing a Water Quality Research Laboratory at UMES. Title III. Co-developer. **\$500,000**;
3. Establishment of a Living Marine Resource Science Cooperative Center. NOAA. Co-developer. **\$5 million**;
4. Managing Nutrient and Sediment Transport in Ditch-Drained Agro-ecosystems. 2003. National Water Quality Initiative Program/IFAFS, USDA. Principal investigator. 2003. **\$498,960**;
5. Development of a Production, Propagation and Planting Business for Submerged Aquatic Vegetation Seedlings. 2003. Principal investigator. NOAA. **\$299,995**;
6. Development of a Subsurface Application Technology for Dry Poultry Litter to Water Quality. 2010. USDA Capacity Building Grant. Investigator. **\$599,880**;
7. Gypsum Curtains: Reducing soluble phosphorus losses from phosphorus-saturated soils on poultry operations. Principal Investigator. 2010. USDA-NRCS Conservation Innovation Grant (includes a **\$1-million** dollar match from Constellation Energy, Inc., Baltimore, MD, (**First \$Million dollar NRCS Innovative grant awarded to an 1890 Institution**). **\$1,999,987**.
8. Watershed level examination of urea use as fertilizer and the production of the biotoxin domoic acid. 2010. USDA Capacity Building Grant. Co-investigator. **\$499,968**;
9. 1890 Land Grant Universities Regional Water Center, 2010, USDA Capacity Building Grant. Co-investigator. **\$566,566**;
10. Food Safety Risks for Leafy Greens and Tomatoes from Small Farm Environments Exposed to Manure Dust, Soil Amendments, Insects, and Creek Water. 2010. USDA Capacity Building Grants program. Co-investigator. **\$499,000**;
11. UMES-USDA-ARS Memorandum of Understandings/Cooperative Agreements (MOU-CA).1999-2012. Principal investigator. **\$300,890**;
12. Peter Kleinman, Josh McGrath, Doug Beegle, Ray Bryant, and Arthur L. Allen. USDA Conservation Innovation Grant. 2012. Refining and Harmonizing Phosphorus Indices in the Chesapeake Bay Region to Improve Critical Source Area Identification, and Address Nutrient Management Priorities, Co-Investigator. **\$941,499**.
13. Irrigation Studies with Soybeans in Southeast Arkansas (SEA/CR-USDA) - (co-developer). 1984. **\$156,000**
14. Title XII Program Support Grant, USAID. 1984. **\$274,000**
15. Localization and Quantization of Foliar Applied Nutrients in Various Soybean Cultivars (SEA/CR). 1978. **\$160,000**
16. Natural Resources and Urban Management: A joint degree option (USDA Capacity Building Grant) **\$192,000** - 1997 - Principal investigator
17. Effect of Best Management Practices on Nutrient Pathways in the Manokin River Basin (USDA Capacity Building Grant) - **\$299, 651** - 1998 - Principal investigator. 2001
18. Enhancement of the Masters' Degree Program in Fisheries (USDA Capacity Building Grant) - **\$165,587** -1998 - Co-principal Investigator. 2002.
19. Establishment of a GIS training facility at the University of Maryland Eastern Shore. Title III Program- - Principal

- investigator. 2002. **\$181,000**
20. Establishment of a GIS training facility at the University of Maryland Eastern Shore. Title III Program- Phase II- **\$91,000** - Principal investigator
  21. Fate of 2, 4, 2, 6 Dinitrotoluene in soil and Water ecosystems. Arthur L. Allen and Fawzy Hashem. November, 2003. U.S. Army - **\$19,000**.
  22. Managing Nutrient and Sediment Transport in Ditch-Drained Agro-ecosystems. Brian Needleman, Arthur Allen and Peter Kleinman. National Water Quality Initiative Program/IFAFA. USDA April, 2003. **\$598,960** - September 2003.
  23. Establishing a (GIS/GPS) Technology Training Center for Minority and Other Student Audiences-Phase II. USDA Capacity Grants Program, Arthur L. Allen, (PI) Eric May and Fawzy Hashem. 2003. **\$198,567**.
  24. Development of a Production, Propagation and Planting Business for Submerged Aquatic Vegetation Seedlings. A.L. Allen, Eric May & Anthony Mazzaccaro. NOAA, 2003. **\$299,995**.
  25. Assessing the Drinking Water Quality of Underserved Farms and Families in the Mid-Atlantic Region. Arthur L. Allen & Henry Brooks, USDA-NRI. USDA-NRI- *Part II*, **\$89,000**. 2002-2004.
  26. Geo-spatial Information Technology Infrastructure Enhancement. USDA Capacity Building Grants Program. 2004-2006 - **\$195,078**.
  27. Geospatial Information Technology Use in Water Quality Management: Internships for Minority and Other Audiences. September, 2006. Arthur L. Allen, Eric May, Fawzy Hashem and Tracie Earl... 2006. USDA Capacity Building Grants. **\$199, 960**
  28. Summer Internship Academy for High School and Undergraduates Scholars: *Focus Geospatial Information Technology* Use in Water Quality Management. Arthur L. Allen, Fawzy Hashem, Tracie Earl, and Robert Johnson, Jr. February 2007. *NSF ACTION Program*. **\$17,000**.
  29. Selected Trace Elements Levels in Drainage Ditches and Field Soils due to Long term Poultry Litter and Chemical Applications. Arthur L. Allen, Fawzy Hashem, and Tracie Earl November, 2006. NSF ACTION Program. Principal Investigator. **\$10,500**
  30. Selected Trace Elements Levels in Soil Profiles and Adjacent Drainage Ditches after Long Term Poultry Litter and Chemical Applications. Arthur L. Allen. CSREES-USDA National Facilitation Project for Water Resources. NWQI-Section 406. Mini-Grant-**\$8,500**. 2007-2008.
  31. Determination of an Optimal Food Formulation for Yellow Perch Aquaculture. Eric May, and Arthur L. Allen. NSF ACTION Program. 2007 - 2008. **\$10,500**.
  32. The Direct Incorporation of Poultry Litter Into No Till Soil to Minimize Nutrient Run-off to the Chesapeake Bay. Peter Kleinman, Arthur L. Allen, and Thomas Way. February, 2006 To January, 2008. CICEET. **\$22, 000** To UMES.
  33. Controlling odor and nutrient losses to surface runoff, groundwater and air with new and conventional manure injection technologies on no-till soils. 2005-2008. Peter Kleinman, Arthur L. Allen, Curtis Dell, John Schmidt, Andrew Sharpley, Alan Rotz and Ray Bryant. CIG-USDA. **\$196,291**.
  34. UMES Reference Collection of Fish Diversity. Joseph Love, Arthur L. Allen, and Eric May. USDA Capacity Building Grants Program. January 2006. **\$167, 896**.
  35. An assessment of Drinking Water Quality Among Under-Served Families in Selected Counties on the Eastern Shore of Maryland and Delaware. Arthur L. Allen, `Corrie Cotton, and Henry Brooks. USDA National Water Quality Initiative Program. **\$25,000**. 2007-2008. USDA-NWQI Section 406.
  36. Dry Poultry Litter Incorporation into No-Till Soils to Minimize Trace Element and Nutrient movement to the Chesapeake Bay. Arthur L. Allen, Peter Kleinman, Fawzy Hashem and Leonard Kibet. USDA Evans Allen. CSREES. 2007. **\$12,500**.
  37. Water analysis and sample processing collaboration grant. USDA/ARS. University Park, PA., Penn State University, September, 2007. **\$10,000**.
  38. Removal of nutrients and other pollutants from agricultural drainage ditch water. Joshua M. McGrath, Frank Coale, Thomas Simpson, Brian Needelman, Arthur L. Allen, Ray Bryant, Gary Feyereisem, and Chad Penn. USDA Conservation Innovation grant. 2008. **\$30,000**.
  39. Water analysis and sample processing collaboration grant. USDA/ARS. University Park, PA., Penn State University, September, 2008. **\$12,000**.

#### **Non-Funded Grant Proposal**

The same amount of energy is needed to develop proposals whether they are funded or not. We as researchers must be recognized for not just our success, but our efforts; after all, without effort there would be no successes.

1. Assessment and Abatement of Trace Elements and Phosphorus Movement from Field to Ditch. Fawzy Hashem, Arthur L. Allen, Rufus Chaney, Eaton Codling, Ray Bryant and Peter Kleinman. 2007. USDA Capacity Building Grants Program. **\$299, 879**.

2. Development of a Dry Litter Incorporation Technology to Protect Air and Water Quality on the Delmarva Peninsula. USDA Capacity Building Grants Program. 2005 USDA. Arthur L. Allen, Fawzy Hashem, Peter J. A. Kleinman. **\$456,000.**
3. Kleinman, Dan Pote, Thomas Way, Arthur L. Allen, and Ray Bryant. USDA Capacity Building Grants Program. **\$499, 985.**
4. Geospatial Information Technology Center Infrastructure Enhancement- The Next Dimension. Arthur L. Allen, I. Tito Aighewi, Eric May and Tracie Earl. 2007 USDA Capacity Building Grants Program. **\$199,975.**
5. Pathogen in Poultry Litter Applied on Farmland: Occurrence, Fate and Transport in Soils and Surface Waters in the Delmarva Peninsula. Paulinus Chigbu, Salina Parveen, Fawzy Hashem, Arthur Allen, and Eric May. 2007 USDA/CSREES/NRI. **\$410,000.**
6. Enhancing Geospatial Information Technological Literacy among Minority Youth and Communities on Maryland's Eastern Shore. 2010 NIFA-USDA Capacity Building Grants Program. Arthur Allen. Principal Investigator. **\$400,000.**
7. Preparing future graduate students. 2011 NIFA-USDA Capacity Building Grants Program. Arthur Allen. Co-PI. **\$300,000.**
8. Creating a Greenhouse Gas Market in Maryland. 2011 Conservation Innovation Grant Program. NRCS. Curtis Dell, Peter Kleinman and Arthur Allen. Co-PI. **\$118,990.**
9. Enhancing Geospatial Information Technological Literacy among Minority Youth and Communities on Maryland's Eastern Shore. 2011 NIFA-USDA Capacity Building Grants Program. Arthur Allen. Principal Investigator. **\$490,000.**

**C. Awards & Honors:**

1. 1890 Association of Research Director's & Association of Extension Administrators Outstanding Program Integrated Award, New Orleans, LA, 2007.
2. USDA National Research Initiative Program's Project of Excellence Award. Title of work: *Microbial Studies of soils Amended with Different Manures, 2010.*
3. Journal of Soil & Water Conservation's Best Research Paper Award for Impact and Quality. Title: "*Dynamics of Phosphorus Transfers from Heavily-Manured Coastal Plain Soils to Drainage*", one of the journals' most read and cited articles to date. Partners were ARS-USDA scientists at Penn State University and others, 2011.
4. 2011 Mid-Atlantic Regional Educational Institution and Federal Laboratory Partnership Award. **This was a new award, and we were the first group to be recognized. The award was open to all federal laboratories that conduct research, including, NOAA, NASA, USGS, etc.**
5. University of Maryland System Board of Reagent's Award for Outstanding Faculty Service in Research, **2011. This is the highest award given to faculty among all campuses within The University System of Maryland.** Outstanding Research Award-UMES Graduate College, spring 2011.

**IV. Current Research: Overall research accomplishments & outstanding achievements:**

**A.** Current research involves a unique collaborative partnership formed by the applicant with USDA-ARS located at Penn State University in 1999. We are presently testing two new technologies developed at UMES with USDA-ARS partners at University Park, PA at Penn State University; Auburn University, and University of Arkansas at Booneville. This partnership is responsible for establishing UMES as a leader in water quality/nutrient-management research among ALL small colleges and universities in America. Further, this collaboration is responsible for UMES receiving several research awards in 2010. We conduct leading-edge research in the area of water quality and nutrient management designed to improve the health of the Chesapeake Bay and its tributaries. Since 1999, UMES has established, a **multi-million dollar** equipped research assessment facility in water quality/nutrient management with the assistance of collaborative partner, USDA-ARS at University Park PA. At Present, the applicant is advising a Master's and PhD student, and providing all year-round research internships for 5 five undergraduate students. I am also supervising two technicians, (field and lab).

**B. Significant Research Accomplishments:**

1. **Gypsum Curtain Project:** UMES; USDA-ARS at University Park PA, and Constellation Energy, Inc. in Baltimore, MD, **\$2-million funded 2010. Impact:** Soluble phosphorus was reduced 70 to 95% as groundwater passed through the "gypsum curtains leading to drainage ditches."

2. **Subsurfer Project:** UMES, USDA-ARS at the Dale Bumpers Small Farm Research Center at Booneville Arkansas, USDA-ARS, USDA-ARS-University Park PA, and USDA-ARS at Auburn University, **\$599,880. Funded 2010.**  
**Impact:** 90% phosphorus reduction in runoff, and NH<sub>3</sub> emissions under some conditions.
3. **Domoic Acid Project:** UMES, USDA-ARS-University Park PA, and Penn State University, **\$499,993. Funded 2010.**  
**Impact:** Reduce the level of the diatom Pseudo-nitzschia which produces domoic acid which, in turn, causes amnesic shellfish poisoning in seafood. This is very serious relative to the livelihood of Waterman and the Delmarva economy.
4. Since the development of a collaborative research partnership by the applicant in 1999, we have developed **32** refereed publications, **2** book chapters, and **73** other publications as posters, oral papers at mainstream conferences.
5. Trained **7** graduate students, and provided research training for **50** or more under graduate students.
6. I was recently selected as the 2013 Vice Chairman for the “Gypsum use in Agriculture Research Community” section of the International Soil Science Society of America Annual Meetings (SSSA).
7. I served as moderator for an oral research session at the 2009 International SSSA Meetings at Pittsburg, PA.
8. **In 2007, I co-authored six refereed articles in one Journal in 2010 (See shaded-out numbers below).**
9. Received the University of Maryland System’s Board of Regents Award for Outstanding Faculty Service in Research. **2011. This is the highest award given to faculty among all campuses within The University System of Maryland.**

#### C. Publications- REFEREED

1. Robert E. Vaughan, Brian A. Needelman, Peter J. A. Kleinman, and Arthur L. Allen. 2007. Spatial Variation of Soil Phosphorus within a Drainage Ditch Network. *Journal of Environmental Quality* 36: 1096-1104.
2. Needelman, B., P. J. A. Kleinman, J. S. Strock, and A. L. Allen. 2007. Improved Management of Agricultural Drainage Ditches for Water Quality Protection. (An Overview). *Journal of Soil and Water Conservation*. 62 (4): 171-178.
3. Kleinman, P., A. L. Allen, B. Needelman, A. Sharpley, P. Vadas, L. Saporito, G. Folmar, and R. Bryant. 2007. Dynamics of Phosphorus Transfers from Heavily- Manured Coastal Plain Soils to Drainage Ditches. *Journal of Soil and Water Conservation*. 62 (4): 225-235.
4. Schmidt, J., C. J. Dell, P. A. Vadas, and A. L. Allen. 2007. Nitrogen Export from Coastal Plain Field Ditches. *Journal of Soil and Water Conservation*. 62 (4): 235-244.
5. P. A. Vadas, M. S. Srinivasan, P. J. A. Kleinman, J. P. Schmidt, and A. L. Allen. 2007. Hydrology and groundwater nutrient concentrations in a ditch-drained agro-ecosystem. *Journal of Soil and Water Conservation*. 62 (4):178-188
6. Chad J. Penn, Ray B. Bryant, Peter J. A. Kleinman, and Arthur L. Allen. 2007. Removing dissolved phosphorus from drainage ditch water with phosphorus sorbing materials *Journal of Soil and Water Conservation* 62 (4):269-276.
7. John P. Schmidt, Curtis J. Dell, Peter A. Vadas, and Arthur L. Allen. 2007. Nitrogen export from Coastal Plain field ditches. *Journal of Soil and Water Conservation* 62 (4):235-243.
8. Atalay A., S. Pao<sup>1</sup>, M. James, B. Whitehead and A. Allen. Drinking water assessment at underserved farms in Virginia’s coastal plain. 2008. *Journal of Environmental Monitoring & Restoration* 4:54-65, *JEMREST* 4:54-65, 2008. 54.
9. Shigaki, F., P.J.A. Kleinman, J.P. Schmidt, A. N. Sharpley and A. L. Allen. 2008. Impact of dredging on phosphorus transport in agricultural drainage ditches of the Atlantic Coastal Plain. *J. Amer. Water Res. Assoc.*
10. Sharpley, Andrew N., Peter J.A. Kleinman, Philip Jordan, Lars Bergström, and Arthur L. Allen. 2009. Evaluating the Success of Phosphorus Management from Field to Watershed. 2009. *J. Environ. Qual.* 38:1981–1988.
11. Shigaki, Francirose John P. Schmidt and Peter J. A. Kleinman, Andrew N. Sharpley, and Arthur L. Allen. Nitrogen Fate in Drainage Ditches of the Coastal Plain after Dredging. 2009. *J. Environ. Qual.* 38:2449–2457.
12. Kibet, Leonard C., Arthur L. Allen, Peter J.A. Kleinman, Gary W. Feyereisen, Clinton Church, Lou S. Saporito, and Thomas R. Way. 2010. Phosphorus runoff losses from subsurface-applied poultry litter on Coastal Plain soils. *Journal of Environmental Quality*. 40: 412-420.
13. Feyereisen, Gary W. Peter J. Kleinman, Gordon J. Folmar, Lou S. Saporito, Clinton D Church, Thomas R. Way, and Arthur L. Allen. Effect of direct incorporation of poultry litter on phosphorus leaching from Coastal Plain soils. *Journal Soil and Water Quality*. July/August 2010-vol. 65:243-251.
14. Church Clinton D., Peter J. A. Kleinman, Ray B. Bryant, Lou S. Saporito and Arthur L. Allen. 2010. Occurrence of arsenic and phosphorus in ditch flow from litter-amended soils and barn areas. *Journal of Environmental Quality*.39: 2080-2088.

15. Bryant, Ray, Arthur L. Allen, Peter Kleinman, Eric May, Clinton Church, and Tony Buda. "There's More Than one way to save the Bay". In USDA's. Agricultural Research Magazine. August Issue, 2010. Pp 4-8.
16. Bryant, Ray, Allen, Arthur L. and Peter Kleinman. *Helping save the Chesapeake Bay*. U.S. Department of Agriculture-Agricultural Research Service Periodical. Vol. 58. No.7 ISSN0002-161X. August, 2010.
17. Pote, Daniel H., Thomas R. Way, Peter J. A. Kleinman, Philip A. Moore, John J. Meisinger, Karamat R. Sistani, Louis S. Saporito, Arthur L. Allen, and Gary W. Feyereisen. 2011. Subsurface Application of Poultry Litter in Pasture and No-Till Soils. *Journal of Environmental Quality* 40: 2: 402-411
18. Johnson, Keisha N., Arthur L. Allen, Peter J. A. Kleinman, Fawzy M. Hashem, Andrew N. Sharpley and William L. Stout. (Deceased). 2011. Use of coal combustion by-products to minimize phosphorus in runoff from a coastal plain soil. *Communications in Soil Science and Plant Analysis*. 42:7,778-779.
22. Peter J. A. Kleinman, Andrew N. Sharpley, Anthony R. Buda, Richard W. McDowell, and Arthur L. Allen. 2011. Soil controls of phosphorus in runoff: Management barriers and opportunities. *Canadian Journal of Soil Science*. 91: 1-10.
23. Kibet, L. Clinton church, Arthur L. Allen, Peter Kleinman, Lou Saporito, and Thomas Way. Transport of dissolved trace elements in surface runoff and leachate from a coastal plain soil after poultry litter application. *Journal of Soil and Water Conservation*. In Press. 2012.
24. Allen, A. L., R. Bryant, et al. 2006. ARS's Quest to Improve the Chesapeake Bay. United States Department of Agriculture, *Agricultural Research*. Magazine. November/December. 54 (11-12):14-15.
25. Bryant, Ray, Allen, Arthur L. Peter Kleinman, Eric May, Clinton Church, and Tony Buda. "There's More Than one way to save the Bay". In USDA's. Agricultural Research Magazine. August Issue, 2010. Pp 4-8.
26. Allen, A. L., R. Bryant, et al. 2006. ARS's Quest to Improve the Chesapeake Bay. United States Department of Agriculture, *Agricultural Research*. Magazine. November/December. 54 (11-12):14-15.
27. Peter J. A. Kleinman, Andrew N. Sharpley, Anthony R. Buda, Richard W. McDowell, and Arthur L. Allen. 2011. Soil controls of phosphorus in runoff: Management barriers and opportunities. *Canadian Journal of Soil Science*. 91: 1-10.
28. Ray B. Bryant, Anthony R. Buda, Peter J.A. Kleinman, Clinton D. Church, Louis S. Saporito, Gordon J. Folmar, Saili Bose, and Arthur L. Allen. Using Flue Gas Desulfurization Gypsum to Remove Dissolved Phosphorus from Agricultural Drainage Waters 2012. *J Environ Qual.*; 40 (2):412-20 21520748.
29. Church, C., Kleinman, P.J.A., Bryant, R.B., Saporito, L.S., Allen, A.L. 2010. Occurrence of arsenic and phosphorus in ditch flow from litter-amended soils and barn areas. *Journal of Environmental Quality*. Available: <https://www.soils.org/files/publications/jeq/abstracts/39-6/q09-0210-abstract.pdf>.
30. Javaid, I., J. M. Joshi, R. B. Dadson, F. M. Hashem, and A. L. Allen. 2005. The potential of Bt Corn as a Trap Crop for the Control of Corn Earworm, *Helicoverpa zea* Boddie, in soybean. *Journal of Sustainable Agriculture*. 26 (1): 115-121.
31. Javaid, I., J. M. Joshi, R. B. Dadson, F. M. Hashem, and A. L. Allen. 2005. Antibiosis to Corn Earworm *Helicoverpa zea* Boddie by Cowpea Genotypes. *Journal of Sustainable Agriculture*. 26 (3):125-132.
32. Smith, B.D., F.M. Hashem, P. Millner, A.L. Allen, P. Kleinman, R. Bryant, L.E. Marsh, and C.P. Cotton. 2012. Microbial transport in runoff from soils amended with different manures. (Accepted for publication in *J. Environ. Qual.*).
32. Dadson, R., F. M. Hashem, I. Javaid, J. M. Joshi, A. L. Allen, and T. Devine. 2004. Effect of Water Stress on the Yield of Cowpea (*Vigna unguiculat* L. Walp.) Genotypes in the Delmarva Region of the United States. *J. Agronomy Crop Science*. 191:210-217.
33. Dadson, R., F. M. Hashem, I. Javaid, J. M. Joshi, and A. L. Allen. 2005. Effect of Insecticide Spray Applications, Sowing Dates and Cultivar Resistance on Insect Pest. *Journal of Sustainable Agriculture*. 26 (3): 57-68.
34. Vaughan, R.E., B.A. Needelman, P.J.A. Kleinman, and A.L. Allen. 2007. Vertical distribution of phosphorus in agricultural drainage ditch soils. *J Environ Qual* 36: 18951903.
35. Allen, A.L., F. J. Stevenson, and T. Kurtz. Chemical Distribution of Residual Soil Fertilizer Derived Nitrogen. 1973. *Journal of Environ. Quality*, 2 (2):120-124.
36. Price, M., and A. L. Allen. Characterization of Rice (*Oryza Sativa* L.). 1989. Roots versus Root Pulling Resistance as Selection Indices for Drought Tolerance. *Proceedings, Arkansas Academy of Science*. 43, pp. 63-65.
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### **Chapters in Books:**

1. Dadson, R., J. M. Joshi, F. M. Hashem, A. L. Allen, C. Bolek, S. M. Muliokela, and A. Chalebesa 2005. In R. Lal, Stewart, B.A., Uphoff, N. and David O. Hansen, Eds. "Terrestrial Carbon Sequestration in Zambia". CRC Press, Boca Raton, FL. pp 605 - 638.
2. Peter, J. Kleinman, Arthur Allen, and Brian Needelman. 2010. The role of drainage ditches in nutrient transfers from heavily-manured fields of the Delmarva Peninsula. In: Moore, M. T., Kröger R., editors. *Agricultural Drainage Ditches: Mitigation Wetlands for the 21st Century*. Kerala, India: Research Signpost. pp. 107-124.

3. Clinton D. Church, Jane E. Hill, and Arthur L. Allen. Fate and transport of arsenic from organoarsenicals fed to poultry. 2011. Environmental Chemistry of Animal Manure, Zhongqi He, editor. Nova Science Publishers. Chapter17. ISBN: 978-1-61209-222-5.
4. Arthur L. Allen. "*The Carpenter Family: Farming Vegetables and Small Fruits Keeps Their Dream Alive,*" Part II, *Chapter 12*, 1990 Yearbook of Agriculture, USDA.

#### **Selected Non-Refereed Publications- Posters, Oral Presentations and Abstracts:**

1. Ray Bryant, Anthony Buda, Peter Kleinman, Clint Church, Arthur Allen, Joshua McGrath, and Gary Felton. Oral Presentation. Reducing soluble phosphorus losses in drainage ditches using synthetic gypsum. 2010 USDA-ARS Conference, Philadelphia, PA.
2. Senorpe Asem-Hiablie, Clinton D. Church, Isoken T. Aighewi, Arthur L. Allen, Paul Spock, and Eric B. May. SPE-LC/ESI/MS: A simple and reproducible method for detection and quantification of 17 $\beta$ -estradiol in aqueous samples. Pittsburgh, Pennsylvania. 2010. Oral Presentation. ASABE Annual International Meeting.
3. Feyereisen, G.W., P. J. A. Kleinman, G.J. Folmar, L.S. Saporito, and A. L. Allen. 2010. A phosphorus transport study: Influence of poultry litter application method on leaching. ASABE Paper No. 1009193. St. Joseph, Mich.: ASABE Oral Presentation.
4. Brett Smith, Fawzy Hashem, Patricia Millner, Arthur Allen, Peter Kleinman, Ray Bryant, Lurline Marsh and Corrie Cotton. Microbial Transport in Surface Runoff from Manure-Amended Soils. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
5. Daniel Pote, Thomas Way, Peter Kleinman, Philip Moore Jr., Karamat Sistani, and Arthur Allen. Effects of Subsurface Applying Poultry Litter in Pasture and No-till Systems. Oral Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
6. Ray B. Bryant, Arthur L. Allen, Anthony Buda, Peter Kleinman, Clinton Church, Joshua McGrath, Karen Grubb and Salil Bose. Using FGD Gypsum to Remove Soluble Phosphorus from Agricultural Drainage Waters. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
7. Brett Smith, Fawzy Hashem, Patricia Millner, Arthur Allen, Peter Kleinman, Ray Bryant, Lurline Marsh and Corrie Cotton. Occurrence and Quantities of Salmonella and *E. coli* in Runoff Water from Soil Amended with Various Manure Types. Poster Presentation. 2010 Biennial ARD Research Symposium. Atlanta, Georgia.
8. L. C. Kibet, A. L. Allen, F. Hashem, C. Church, P. J. Kleinman, L. S. Saporito, G. W. Feyereisen, and Tom Way. Trace Element Losses in Runoff after Subsurface Applied Poultry Litter. Poster Presentation. 2011 ARD Biennial Research Symposium. Atlanta Georgia.
9. Arthur L. Allen, Ray Bryant, Anthony Buda, Gary Felton, and Salil Bose. Use of Gypsum Curtains to reduce soluble phosphorus losses from P-saturated soils on poultry Operations. 2011 Poster Showcase Session. 66<sup>th</sup> Annual Conference. Washington, D.C., P-14. July17-20.
10. Leonard Kibet, Eric May, Arthur Allen, Sarah Gustafson, Han Kun, Ray Bryant, Anthony Buda, and Peter Kleinman. Measuring urea persistence, distribution and transport on coastal plain soil types. 2012 SSSA International Meetings. Cincinnati, Ohio.
11. Kun Han, Peter Kleinman, Ray Bryant, Mark S. Reiter, Joshua McGrath, Clinton Church, and Arthur Allen. Effect of Tillage on Phosphorus Leaching Through Coastal Plain Soils. SSSA International Meetings, 2012. Cincinnati, Ohio.
12. Kibet, L., Gustafson, S., Allen, A., Hashem, F., Kleinman, P.J., Buda, A.R., Bryant, R.B., May, E. 2011. Watershed level examination of urea fate, transport, and the production of the biotoxin domoic acid [abstract]. ASA-CSSA-SSSA Annual Meeting Abstracts. Paper No. 77.
13. A. L. Allen, F.M. Hashem, R.B. Dadson, A. I. Mohamed, S.A. Mohmoud. Screening Faba Bean Genotypes for Drought Tolerance. Agronomy Abstracts: 2003 Annual Meeting of the American Society of Agronomy, Salt Lake City Utah, page-207.
14. S. A. Mohmoud, A.L. Allen, M.A. Omar, M.M. AL-Handy, M.S. Said, M.M. Attia, R.B. Dadson, F.M. Hashem. Selection of Drought Tolerant Faba Bean Genotypes. Agronomy Abstracts: 2003Annual Meeting of the American Society of Agronomy, Salt Lake City Utah, P. 319.
15. A. L. Allen, R. Dadson, F.M. Hashem, A. Mohamed & J. Joshi. Screening Faba Bean Genotypes for Drought Tolerance in Egypt. Agronomy Abstracts. 1999 Annual Meeting of the American Society of Agronomy, Salt Lake City, Utah, p 98.
16. A. L. Allen, K. J. Johnson, & F. M. Hashem & W. L. Stout. Use of Selected Coal Combustion By-products to Minimize Soluble Phosphorus in Soils with Elevated Phosphorus Levels. 2002 Biennial Symposium, Association of Research Directors, Atlanta, Georgia.
17. A. L. Allen, F. M. Soliman. F. M. Hashem, K. A. Ahou-Zeid. & W.L. Stout. Alternatives to Alum for Reducing Ammonia Volatilization from Poultry Litter. 2002 Annual Meeting of the American Society of Agronomy, Indianapolis Indiana, p 358.



18. S. Barnes, A. L. Allen, R.O. Maguire. Effect of Nitrogen vs. Phosphorus Nutrient Management Plans on Subsurface Movement of Phosphorus on the Eastern Shore of Maryland. 2001 Southeast Fish and Wildlife Association National Meeting - Louisville, KY, p 203, November.
19. A. L. Allen, P. J. Kleinman, K. J. Johnson, and F.M. Hashem. Coal Combustion by-products: Controlling Phosphorus Movement in Runoff. 2003 Annual Meeting of the American Society of Agronomy, Denver, CO. p 174.
20. E.M. Soliman, F.M. Hashem, A.L. Allen, R.B. Dadson and K.A. Abou-Zeid. Effect of Soil Conditioners and Soil Moisture Regimes on Nodulation and Growth of Three Legumes. 2003 Annual Meeting of the American Society of Agronomy, Denver, CO.
21. R. Dadson, F.M. Hashem, I. Javaid, J. Joshi, and A. L. Allen. Response of Diverse Cowpea Genotypes to Drought. 2003 Annual Meeting of the American Society of Agronomy, Denver, CO., p 306.
22. R.E. Vaughan, B.A. Needleman, A. L. Allen, and P. J. A. Kleinman. Nutrient Transport in Soils of Coastal Plain Agricultural Drainage Ditches. 2003 Annual Meeting of the American Society of Agronomy, Denver, CO., p -149.
23. F.M. Hashem, R.B. Dadson, B. M. Green, A. L. Allen, and J. Joshi. Interaction Between *bradyrhizobium japonicum*, Forage and Roundup Ready Soybean Cultivars. 2002 Annual Meeting of the American Society of Agronomy, Indianapolis Indiana, p. 248.
24. Johnson, K. J., A. L. Allen, and W. L. Stout. Use of Coal Combustion By-Products in Reducing Phosphorus Loss from Cropland. Abstract, 2001 Annual Meeting of the American Society of Agronomy, Charlotte, N.C., P. 381.
25. R. O. Maguire, A. L. Allen, J. T. Sims, W. L. Stout, W. J. Gbureck and A. N. Sharpley. Effect of Nitrogen vs. Phosphorus Nutrient Management Plans on Subsurface Movement of Phosphorus. Abstract. 2001 Annual Meeting of the American Society of Agronomy, Charlotte, N.C., p - 381.
26. Fawzy M. Hashem, Arthur L. Allen, Nadia Abou-Zeid, and Khaled Abou-Zeid. Fate of 2-4 and 2-6 Dinitrotoluene in Soil Ecosystems. Abstract. 2004 Annual Meeting of the American Society of Agronomy, Seattle, Washington. P-339.
27. Michael Bonsteel, Arthur Allen, Anthony Mazzaccaro, Eric May, and Scott Jones. The Application of Production Agriculture Technology to Large-Scale SAV Restoration in the Chesapeake Bay. Abstract/poster presentation. NOAA 2004 Annual Symposium. CUNY, New York.
28. Arthur Allen, P. J. Kleinman, L. Saporito, and William Stout (deceased). Changing from N-to-P Based Manure Management can decrease soil and runoff P. Abstract/poster presentation. 2004 Annual Meeting of the American Society of Agronomy, Seattle, Washington, P-369.
29. R. Dadson, F.M. Hashem, A. L. Allen, and J. Joshi. Leaf Resistance to Corn Earworm by Cowpea Cultivars. Abstract/poster presentation. 2004 Annual Meeting of the American Society of Agronomy, Seattle, Washington, P-306.
30. R. E. Vaughn, B.A. Needleman, P. J. Kleinman, and Arthur Allen. Drainage Ditch Morphology Properties: Implications for Nutrient Transport. Abstract/poster presentation, 2004 Annual Meeting of the American Society of Agronomy, Seattle, Washington. P378.
31. R. Dadson, F.M. Hashem, I. Javaid, J. Joshi, and A. L. Allen. Cowpea as an Alternative Crop for Sustainable Crop Production in the Delmarva Region. Abstract/poster presentation. 2004 Annual Meeting of the American Society of Agronomy, Seattle, Washington, P 188.
32. Franci Shigaki, Arthur Allen, Peter J. Kleinman, Andrew Sharpley, Rory Maguire, J. T. Sims and Bill Stout. Manure Nutrient Management of Phosphorus and Nitrogen on a Coastal Plain Soil. 2007. 2006 International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
33. C. J. Penn, R.B. Bryant: A. N. Sharpley and A. Allen. Land Application of Gypsum: Agronomic and Environmental Implications. 2006 International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
34. David Ruppert, Brian Needelman, Peter Kleinman, and Arthur Allen. Horizonation, Fe Mineralogy and P Content in Surface Soils in two Drainage Ditches on Maryland's Eastern Shore. 2006 International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
35. Allen A. L., P. Kleinman, A. Sharpley, R. Maguire, J. T. Sims, and B. Stout. Manure Nutrient Management of Phosphorous and Nitrogen on Coastal Plain Soil. 2006 CD-Ram of the International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
36. Ruppert, D., B. A. Needelman, P. Kleinman and A. L. Allen. Seasonal Dynamics of Phosphorous Sorption and Transport in two Ditch Soils. 2006 International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
37. Wills. S., B. Needelman, P. Kleinman and A. L. Allen. Phosphorous Transport in a Ditch-drained Agro-ecosystem During Two Large Storm flow Events. 2006 International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
38. Clinton D. Church, Arthur Allen, Ray Bryant, Gary Feyerisen, and Peter Kleinman. Poster Presentation. Correlations between Poultry Litter Derived Phosphorus and Arsenic. 2008 SERA-17 Meeting. Kent Narrows, MD.
39. Arthur Allen and Peter Kleinman. Partnering over Agriculture and Water Quality in the Chesapeake Bay Watershed... Oral Paper & Poster Presentation. 2008 USDA- CSRES Project Directors Conference. Beltsville, MD.

40. Arthur L. Allen, Peter Kleinman, Tracie Earl, and Fawzy Hashem. Exposing high school scholars to geospatial information technologies and water quality management. Oral Paper & Poster Presentation. 2008USDA - CSRES Project Directors Conference. Beltsville, MD.
41. David Ruppert, Brian Needelman, Peter Kleinman, Martin Rabenhors, Bahram Momen, and Arthur Allen. P Flux in Ditch Soil Mesocosms: Poster Presentation. The Effects of Pedologic and Hydraulic Treatments. 2008 International Annual Meeting of the SSSA, Houston, TX.
42. Leonard Kibet, Arthur Allen, Peter Kleinman, Daniel Pote, Gary Feyereisen and T. Way. Effect of Sub-Surface Incorporation of Dry Poultry Litter on Nutrient Runoff from No-Till Soils. International. Poster Presentation. October 5-9. 2008 Annual Meeting of the SSSA, Houston, TX.
43. Arthur Allen and Peter Kleinman. Partnering over Agriculture and Water Quality in the Chesapeake Bay Watershed. 2008 USDA-CSRES Project Directors Conference. Oral & Poster presentation. Beltsville, MD.
44. David Ruppert, Brian Needelman, Peter Kleinman, Martin Rabenhors, Bahram Momen and Arthur Allen. P Flux in Ditch Soil Mesocosms: The Effects of Pedologic and Hydraulic Treatments. Poster Presentation. 2008 International Annual Meeting of the SSSA, Houston, TX.
45. Clinton D. Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. 2009 Invited Presentation to Brown Cancer Center, University of Louisville: "Arsenic, Chickens, and Cancer: Is there a connection?" Oral Paper & Poster Presentation. Louisville, KY.
46. Clinton D. Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. 2009 Invited Oral Paper & Poster Presentation to Associate Director, US-EPA Office of Water: "Occurrence of arsenic and phosphorus in ditch flow from litter amended soils and barn areas. Baltimore, MD.
47. Clinton D. Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. Poster Presentation. Soil Occurrence of arsenic and phosphorus in ditch flow from litter amended soils and barn areas". 2009. Soil Science Society of America Fall Meeting. Dearborn, MI.
48. Clinton D. Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. Poster Presentation. Emerging Contaminants and Metals: *The new water quality frontier?* USDA-ARS National Program Staff, Beltsville, MD. 2009.
49. Clinton D. Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. Oral Presentation. Occurrence of arsenic and phosphorus in ditch flow from litter amended soils and barn areas". 2009 Maryland Water Resources Research Center, College Park, MD.
50. Leonard Kibet, Arthur Allen, Peter Kleinman, Clinton Church, Lou Saporito, Gary Feyereisen, Tom Way, and Dan Pote. Poster Presentation. Effects of Subsurface Band Incorporation of Dry Poultry Litter to No-till Soil on Delmarva. 2009 Annual Meeting of the SSSA, Pittsburg, PA.
51. Leonard Kibet, Arthur Allen, Peter Kleinman, Gary Feyereisen, Clinton Church, Lou Saporito and Tom Way. Subsurface Application of Poultry Litter to Minimize Phosphorus Runoff. Poster Presentation. 2009 Association of Research Directors Symposium. Atlanta, GA.
52. Clinton D Church, Peter J. A. Kleinman, Ray B. Bryant, and Arthur L. Allen. 2010. Emerging Contaminants and Metals: The new water quality frontier? ARS National Program Staff. Oral Presentation. USEPA Workshop. Princess Anne, MD.
53. Ray Bryant, Anthony Buda, Peter Kleinman, Clint Church, Arthur Allen, Joshua McGrath, and Gary Felton. Oral Presentation. Reducing soluble phosphorus losses in drainage ditches using synthetic gypsum. 2010 USDA-ARS Conference, Philadelphia, PA.
54. The UMES Agricultural Experiment Station Research Magazine. Volume-1. "USDA Civil Rights Secretary Visits UMES". pp. 12-13; "UMES Maybe Small, but its Research has Big Implications for the Chesapeake Bay". Pp. 14-17. (Reprinted with permission from The 2010 Chesapeake Bay Journal, Kent Blankenship, Editor), May Issue.
55. Senorpe Asem-Hiablie, Clinton D. Church, Isoken T. Aighewi, Arthur L. Allen, Paul Spock, and Eric B. May. SPE-LC/ESI/MS: A simple and reproducible method for detection and quantification of 17 $\beta$ -estradiol in aqueous samples. Pittsburgh, Pennsylvania. 2010. Oral Presentation. ASABE Annual International Meeting.
56. Feyereisen, G.W., P. J. A. Kleinman, G.J. Folmar, L.S. Saporito, and A. L. Allen. 2010. A phosphorus transport study: Influence of poultry litter application method on leaching. ASABE Paper No. 1009193. St. Joseph, Mich.: ASABE Oral Presentation.
57. Clinton Church, Peter Kleinman, Ray Bryant, and Arthur Allen. Transport of Arsenic and Phosphorus in Ditch Flow from Litter-Amended Soils and Barn Areas. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
58. Leonard Kibet, Arthur Allen, Peter Kleinman, Clinton Church, Gary Feyereisen, Thomas Way and Fawzy Hashem... Trace Element Losses in Runoff Due to Subsurface - Applied Poultry Litter On a Coastal Plain Soil. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
59. Brett Smith, Fawzy Hashem, Patricia Millner, Arthur Allen, Peter Kleinman, Ray Bryant, Lurline Marsh and Corrie Cotton. Microbial Transport in Surface Runoff from Manure-Amended Soils. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.

60. Daniel Pote, Thomas Way, Peter Kleinman, Philip Moore Jr., Karamat Sistani, and Arthur Allen. Effects of Subsurface Applying Poultry Litter in Pasture and No-till Systems. Oral Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
61. Ray B. Bryant, Arthur L. Allen, Anthony Buda, Peter Kleinman, Clinton Church, Joshua McGrath, Karen Grubb and Salil Bose. Using FGD Gypsum to Remove Soluble Phosphorus from Agricultural Drainage Waters. Poster Presentation. 2010 Annual Meeting of the SSSA, Long Beach, CA.
62. Brett Smith, Fawzy Hashem, Patricia Millner, Arthur Allen, Peter Kleinman, Ray Bryant, Lurline Marsh and Corrie Cotton. Occurrence and Quantities of Salmonella and *E. coli* in Runoff Water from Soil Amended with Various Manure Types. Poster Presentation. 2010 Biennial ARD Research Symposium. Atlanta, Georgia.
63. L. C. Kibet, A. L. Allen, F. Hashem, C. Church, P. J. Kleinman, L. S. Saporito, G. W. Feyereisen, and Tom Way. Trace Element Losses in Runoff after Subsurface Applied Poultry Litter. Poster Presentation. At the 2011 ARD Biennial Research Symposium. Atlanta Georgia.
64. Arthur L. Allen, Ray Bryant, Anthony Buda, Gary Felton, and Salil Bose. Use of Gypsum Curtains to reduce soluble phosphorus losses from P-saturated soils on poultry Operations. 2011Poster Showcase Session. 66<sup>th</sup> Annual Conference. Washington, D.C., July17-20.
65. Arthur L. Allen. Integrated Collaborative Approaches to Nutrient Management Research. "A Dedication to William Bill Stout". National Conference on Water Quality Tour, Ocean City Maryland, MD. October, 2005.
66. Needelman, Brian. Arthur L. Allen and Peter Kleinman. 2008. Managing Delmarva Agricultural Drainage Ditch for Water Quality Protection. The University of Maryland, College of Agriculture & Natural Resources. University Press.
67. Leonard Kibet. 2009. Impact of a subsurface litter application technology on surface runoff from no -till soils. *Master's Thesis*. University of Maryland Eastern Shore.
68. Allen, A. L., R. Bryant, et al. 2006. Arc's Quest to Improve the Chesapeake Bay. United States Department of Agriculture, *Agricultural Research*. Magazine. November/December. 54 (11-12):14-15.
69. Allen, Arthur L., Peter Kleinman, and Tracie Earl. 2005, 2006, & 2007. Geospatial Information Technologies and Water quality Management. "Fact Sheets". Summer Internship Program. University of Maryland Eastern Shore. Vol. 1, 2, & 3.
70. Allen, Arthur L. Departmental Newsletters. Department of Agriculture. *A nice place to grow*. University of Maryland Eastern Shore. 1998-1999
71. Michael Bonsteel, Arthur Allen, Anthony Mazzaccaro, Eric May, and Scott Jones. The Application of Production Agriculture Technology to Large-Scale SAV Restoration in the Chesapeake Bay. Abstract/poster presentation. NOAA Annual Symposium. CUNY, New York. 2004.
72. Rupert D., B. A. Needelman, P. Kleinman and A. L. Allen. 2006. Seasonal Dynamics of Phosphorous Sorption and Transport in two Ditch Soils. CD-Ram of the International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
73. Wills S., B. Needelman, P. Kleinman and A. L. Allen. Phosphorous Transport in a Ditch-drained Agro-ecosystem During Two Large Storm flow Events. 2006. International Annual Meeting of the SSSA, Indianapolis, IN, Nov. 12-16.
74. L. E. Marsh, F. M. Hashem, C. P. Cotton, and A. L. Allen. Undergraduate Research Experiences in Sustainable Agriculture: Students and Mentors Perceptions of Interns' Skills. Annual NACTA Meeting, Virginia Tech University. 2013.

#### **Websites Developed:**

1. Arthur L. Allen and Peter J. A. Kleinman. Nutrient management for ditch-drained soils of the Atlantic Coastal Plain; Integrated research management to improve air & water quality. 2009. (Website). [www.umes.edu/nm](http://www.umes.edu/nm).
2. B. A. Needelman, A. L. Allen, P.J.A. Kleinman, and R.B. Bryant. Managing Delmarva agricultural drainage ditches for water quality protection. [Fact sheet] University of Maryland, College Park, Maryland. 2008. [Online]. Available at: <http://www.sawgal.umd.edu/DrainageDitches/ditchmanagement factsheet.pdf>.
3. Allen, Arthur L., and Tracie Earl. *Geospatial Information Technologies*. <http://www.umes.edu/gisinternship/new/home.htm> - "We have our hands on technology" Website. University of Maryland Eastern Shore. 2005- 2007. Tracie Earl Allen, Arthur L. *Geospatial Information Technologies main Website*. University of Maryland Eastern Shore, 2005, 2006, 2007-2012.

#### **D. Public Service:**

##### **A. Selected Manuscripts Reviewed in Refereed Journals:**

1. Nutrient Transport in Runoff from Feedlot Surfaces as Affected by Unconsolidated surface Materials. Journal of Soil and Water Conservation. Manuscript Number: JSWC-D-10-00142.2012
2. Phosphorus fractions and release potential of ditch sediments from different land uses in a small catchment of the Upper Yangtze River. Journal of Soils and Sediments. Manuscript Number: JSSS-D-11-00029. 2010
3. Impact of Vegetative Filter Strips on Phosphorus, Nitrogen, and Sediment Concentrations in Storm water leaving the Production Area of Poultry Farms. MAES Competitive Grant Competition. 2011.

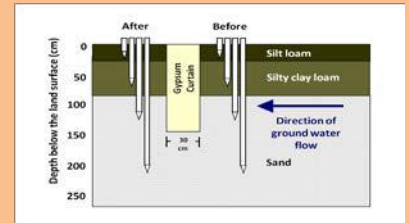
4. Title: Transport of dissolved trace elements in surface runoff and leachate from a Coastal Plain soil after poultry litter application. *Journal of Soil and Water Conservation*. 09/30/2011.
5. Phosphorus sorption-desorption characteristics of top calcareous soils under arid and semi-arid conditions. *Journal of Soils and Sediments*. Manuscript Number: JSSS-D-13-00061. 2013

**B. Research Collaborations Developed: This collaboration was initiated in 1999**

USDA-ARS at Penn State University; Dale Bumpers Small Farm Research Center in Booneville, Arkansas, Virginia Tech University, Constellation Energy, Inc. ;University of Maryland, Penn State University, Virginia State University and USDA-ARS at Auburn University. Our mission is to elucidate processes affecting nutrient transport in ditches, and evaluate alternative management practices to minimize pollutant movement to the Chesapeake Bay, (**Given below in C-1, & C-2**).

**B. Research Technologies Designed to Reduce Water Pollution on Delmarva:**

1. **Ditch Curtain Project** - This research effort is in conjunction with collaborators at USM, USDA-ARS and Constellation Energy, Inc., and is being conducted at the UMES Agricultural Experiment Station, and on stakeholder farms. Flue gas desulfurization (FGD) gypsum, a byproduct of coal-fired power generation, is being used to precipitate soluble phosphorus (P) and thereby reduce P concentrations in groundwater before it enters drainage ditches. Research shows P contents in near surface groundwater was reduced by 50% to 75% using a new technology called “gypsum Curtains”. This research work is needed to help reduce TDML of nutrients to the waters of the Coastal Bays and other water bodies. Additionally, this technology will assist farmers in meeting state-imposed nutrient management plan regulations.



2. **Subsurfer Project** - Partners: USDA-ARS soil scientist Daniel Pote at the Dale Bumpers Small Farm Research Center in Booneville, Arkansas, USDA-ARS Soil Scientist Thomas Way at Auburn University, and USDA-ARS University Park’s Peter Kleinman and Ray Bryant. This technology (see right) places dry poultry litter 3-4 inches beneath the soil surface. Results indicate that this technique reduces P, N and arsenic movement to surface waters by, as much as, 80%, gases (e.g., ammonia and other) gases released to the air are reduced by 40%, and corn yields are increased by 20% to 30% depending on soil type and location.



**D. Mentor of Internship Programs for High School and Undergraduate Students:**

1. **GIS/GPS Summer High School Internship Program; Duration- SIX YEARS** -This activity was held from **2002-2008** due to grants we received from various agencies. The total number of undergraduate student engaged is 50-60; and high school participants exceeded 90. Click on <https://umes.edu/GIS/Content.aspx?id=4916> to see slide live show.
2. **USDA High School Apprenticeship program**-This activity occurred between 1996-1999 while I served as Chairman of the Department of Agriculture. The total number of students involved was approximately 60.
3. Allen, Arthur L., and Tracie Earl. *Geospatial Information Technologies*. <http://www.umes.edu/gisinternship/new/home.htm>. “We have our hands on technology”. Website developed and dedicated to training high school summer intern minority and other race scholars on GIS Technologies. UMES, 2005 - 2007.

**E. Other Public Service Activities:**

1. Hosted the 2008 and 2010 Maryland’s GIS Day Regional activities
2. Hosted the **Governor of Maryland** during April 2007 Earth Week Activities. Conducted tours and introduced water quality technologies we are developing to help save the Chesapeake Bay, (e.g., “Gypsum Curtain and “The Subsurfer”).
3. Hosted a SERI -17 Phosphorus (P) tour for the top **international** scientists on P water quality issues (about 50)
4. Served as Secretary of the 1890 Association of Research Directors, 2002-2003.
5. Developed the Main Program 1890 Association of Research Directors Centennial Celebration. 1990.

6. Served as the Coordinator of the ARD Research Symposium in 1985. Atlanta, GA
7. National Challenge Grant Panel, USDA Office of Higher Education, Washington, DC, 1992.
8. USDA Proposal Review Panel for the 1994 Capacity Building Grants Program, 2005.
9. Appointed by the Honorable Doug Wilder, Governor Commonwealth of Virginia to the State Farmers' Market Board, 1990-1994.
10. Served on Board of Directors for the Northeast Region Rural Development Center, 1996 - 1999
11. Served on Board of Directors, Southern Regional Aquaculture Center, 1986-1989.
12. Served on the USDA National Water Quality Research Initiative Panel **2008 & 2009**.
13. Served on the 1994 Hispanic and Native American USDA Research Panel. 2006.

## EXECUTIVE SUMMARY

My career encompasses **42 years** of public service at **5** 1890 Land-Grant Universities. The first five years involved teaching and research before I became heavily engaged in administrative roles at UAPB as Research Director, Administrator for Extension, Acting Dean and Department Chair, and International Programs Director. After UAPB, I served as Dean and Deputy Research Director at VSU. Since that time, I have been at UMES (16 years), where I have served as Department Chairman, Associate Research Director, and Center Developer and Director of the University-wide Geospatial Information Technologies Center. I have generated more than **100** research publications, and participated in securing over **\$20 million in grants (teaching and research)**. These grants provided many experiential learning opportunities for students of all races at high school, undergraduate and graduate levels. Student involvement is my passion, as I believe they are our future. Thus, their success is in our hands relative to how well they are prepared, and ultimately how well they will perform in the future and fill existing voids in the future workforce.