DORCAS H. FRANKLIN
Associate Professor, Sustainable Agriculture Management
Crop and Soil Sciences Department
University of Georgia

Education

- 2000, Ph.D. Agronomy, University of Georgia
- 1994, M.S. Agronomy, University of Georgia
- 1981, B.S. Forestry, Stephen F. Austin State University and Texas A&M

Professional Experience:

- 1981-1984: Soil Scientist, Soil Conservation Service, Swainsboro, GA
- 1988-1994: Lab Technician, Crop & Soil Sci., Univ. of Georgia
- 1994-1997: Graduate Research Assistant, Crop & Soil Sci., Univ. of Georgia
- 1997-2000: GS 09, Support Scientist, USDA-ARS, Watkinsville, GA
- 2000-2004: GS 11, Geographer/Soil Scientist, USDA-ARS, Watkinsville, GA
- 2004-2007: GS 12, Geographer/Soil Scientist, USDA-ARS, Watkinsville, GA
- 2007-2012: GS 13, Geographer/Soil Scientist, USDA-ARS, Watkinsville, GA
- 2005-2012: Adjunct Research Scientist, Crop & Soil Sciences, Univ. of Georgia
- 2008-Present: Graduate Faculty, Crop & Soil Sciences, Univ. of Georgia
- 2012- Present: Associate Professor, Crop & Soil Science, Univ. of Georgia

Teaching Experience:

- Sustainable Agriculture Management undergraduate and graduate
- Geographic Information Systems for efficient energy and nutrient use

Areas of Expertise:

- Coordination and management of producer participation in watershed studies
- Nutrient management and water quality at plot, field, and watershed scales
- Preferential flow path for water and nutrients through the soil profile
- Rainfall simulation studies
- Spatial and temporal distribution of nutrients in streams and watersheds
- Sustainable Agriculture management
- Use of GIS and GPS technology

Major Accomplishments

- Designed an in-field runoff collector that is now being used by researchers in GA, FL, MS, OH, OK, NC, TX, Puerto Rico, Ireland, and Uruguay
- Designed and led a participatory watershed project with producers, researchers, and educators from Georgia and North Carolina to identify most effective management practices for sustaining and improving stream water quality

- Coordinated workshops on nutrient cycling in the Southern Piedmont as well as farm visits for producers participating in the watershed project
- Designed and coordinated studies at the watershed, field, and plot scales to determine the effect of mechanical aeration on runoff volume and phosphorus concentration in runoff
- Designed and coordinated rainfall simulation studies in riparian areas of Georgia and North Carolina to identify grazing land management practices that minimize runoff losses
- Initiated and led studies in spatial analysis to determine the effect landscapes and management on phosphorus concentrations in streams
- Conducted studies with GPS collars in cattle to determine the effect of alternative water sources on time spent by cattle in unfenced streams and related stream water quality
- Designed and coordinated rainfall simulation studies to evaluate the presence of sex hormones, heavy metals, and antibiotics in runoff from grassland receiving animal manure
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Grants Received (Last 4 Years)

- 2014-2017: Co-Principal Investigator. USDA NRCS Conservation Innovation Grants Program. $995,710.00, UGA portion is $449,180.00. "Improving Soil Health on Pasture-based Livestock Farms in the Southeastern US".

- 2013-2015: Co-Principal Investigator. Georgia Grazing land Conservation Coalition Grants Program. $37,620.00. "Better Grazing: Demonstrating the Benefits of EQIP Practices in Georgia's Grazing Lands".

- 2014 to 2016: Co-Principal Investigator with Jack Crowley. NNF Sustainable Food Systems Graduate Fellowships. $34,434.00. "Crop Up".

- 2007 – 2010: Co-Principal Investigator. USDA National Research Initiative Competitive Grants Program., $324,781.00 "Laboratory and field investigations of the processes affecting phosphorus speciation and dynamics in grasslands fertilized with animal manures"

- 2007 – 2010: Principal Investigator, USDA-SARE Competitive Grants Program. $288,000.00, "Profitable Alternatives to Improve Water Quality from High Nutrient Status Farms"

Grants Submitted (2013-2014)

- 2014-2017: Co-Principal Investigator. USDA NRCS: Conservation Innovation Grants Program. $995,710.00, UGA portion is $449,180.00. "Improving Soil Health on Pasture-based Livestock Farms in the Southeastern US".

- **2014-2016: Principal-Investigator. USDA NRCS: $119,556.00. "Applications of Visible and Near Infrared Reflectance (VNIR) for Soil Health in Pastoral Systems of the Southern Piedmont".**

- 2014 – 2019: AFRI Foundational: $498,158.00. "Fortifying soil microbial richness to

improve nutrient availability "

- 2014 – 2018: Principal Investigator, OREI: $693,488.00, "Ecosystem Services during Transition from Traditional to Organic Agroecosystems".

- 2014-2018: Principal Investigator. NSF/NIFA: Water Sustainability and Climate. $585,404.00. Managing Grasslands to Conserve Water and Buffer Extreme Weather Events.

- 2013-2017: Co-Project Director with David Radcliffe and Miguel Cabrera. USEPA STAR Grant: Water Quality and Animal Manure Management. $2,500,000.00. "Center for Sustainable Water and Nutrient Management at the University of Georgia"

- 2013-2017: Co-Principal Investigator. USDA FY2013 AFRI Foundational Program. Priority Area of Soil, Air, and Water Processes in Agroecosystems in Renewable Energy, Natural Resources, and Environment (RENRE) program. $500,000.00, Lead: Georgia Institute of Technology ($340,000.00) University of Georgia ($159,196.00). Critical Processes and Mitigation of Nutrients and Veterinary Drugs in Poultry Litter-Fertilized Lands.

Service to Profession

- 2014 Member of Grant Review Panel, Sourthern SARE, On-farm Research
- 2013-2014: Member of Grant Review Panel, OCAST Plant Sciences, Oklahoma State
- 2012; Grant Review Panel for USDA, NCRS: Soil Survey
- 2011-2013: Chair Georgia Climate Change Coalition
- 2008-Present: Secretary, Georgia Chapter of Soil and Water conservation Society
- 2006-2007: President, Georgia Chapter of Soil and Water Conservation Society
- 2005-2006: President-elect, Georgia Chapter of Soil and Water Conservation Society
- 2003-2005: Secretary, Georgia Chapter of Soil and Water Conservation Society
- 2003-2004: Reviewer of abstracts submitted for meeting of International Soil and Water Conservation Society
- 2002-2004: Chair, Land-Water Continuum Committee, SERA-IEG 17
- 2002-2003: Grant reviewer for Kansas Water Resources Institute

Service in Graduate Education

- M.S. Advisory Committee for Mr. David Butler, North Carolina State University
- Ph.D. Advisory Committee for Mr. Yebin Zhao, University of Georgia
- Ph.D. Advisory Committee for Mr. David Butler, University of Georgia
- M.S. Advisory Committee for Ms. Chelly Richards, University of Georgia
- M.S. Advisory Committee for Ms. Tasha Mashburn, University of Georgia
- M.S. Advisory Committee for Kelli Coleman, University of Georgia
- M.S. Advisory Committee for Carter Dunn, University of Georgia
- M.S. Advisory Committee for Mr. Adam Martin, University of Georgia

- Ph.D. Advisory Committee for Nicolas Wyngaard, University of Georgia
- Ph.D. Advisory Committee (Major Professor) for Subash Dahal, University of Georgia
- M.S. Advisory Committee (Major Professor) for Taylor Hendricks, University of Georgia
- M.S. Advisory Committee (Major Professor) for Laura Ney, University of Georgia
- Ph.D. Advisory Committee (Major Professor) for Kishan Mahmud, University of Georgia
- M.S. Advisory Committee (co-Major Professor) for Elizabeth Beak, Landscape and Design, University of Georgia
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Peer-Reviewed Journal Publications (* indicates graduate student)

1. **Franklin, D.H.** 1994. Computed tomography and morphological evaluation of preferential flow-paths in a Georgia Piedmont Ultisol. International Winter Meeting of the American Society of Agricultural Engineers, Atlanta, GA, Paper # 94-3584.

2. Gupte, S.M., D.E. Radcliffe, **D.H. Franklin**, L.T. West, E.W. Tollner, and P.F. Hendrix. 1996. Anion transport in a Piedmont ultisol: II. Local-scale parameters. Soil Sci. Soc. Am. J. 60:762-770.

3. **Franklin, D.H.**, M.L. Cabrera, J.L. Steiner, D.M. Endale, and W.P. Miller. 2001. Evaluation of percent flow captured by a small in-field runoff collector. Trans. ASAE 44:551-554.

4. **Franklin, D.H.**, J.L. Steiner, M.L. Cabrera, and E.L. Usery. 2002. Distribution of inorganic nitrogen and phosphorus concentrations in stream flow of two Southern Piedmont watersheds. J. Environ. Qual. 31:1910-1917.

5. **Byers, H.L.*, M.L. Cabrera, *M.K. Mathews*, **D.H. Franklin**, J.G. Andrae, D.E. Radcliffe, M.A. McCann, H.A. Kuykendall, C.S. Hoveland, and V.H. Calvert. 2005. Phosphorus sediment, and *E. Coli* loads in unfenced streams of the Georgia Piedmont, USA. J. Environ. Qual. 34:2292-2300.

6. **Franklin, D.H.**, M.L. Cabrera, and V.H. Calvert. 2006. Fertilizer source and soil aeration effects on runoff volume and quality. Soil Sci. Soc. Am. J. 70:84-89.

7. **Franklin, D.H.**, L.T. West, D.E. Radcliffe, and P.F. Hendrix. 2007. Characteristics and genesis of preferential flow paths in a Piedmont ultisol. Soil Sci. Soc. Am. J. 71:752-758.

8. **Butler, D.M.*, **D.H. Franklin**, N.N. Ranells, M.H. Poore, and J.T. Green, Jr. 2006. Ground cover impacts on sediment and phosphorus export from manured riparian pasture. J. Environ. Qual. (35:2178-2185).

9. **Butler, D.M.*, N.N. Ranells, **D.H. Franklin**, M.H. Poore, and J.T. Green, Jr. 2006. Ground cover impacts on nitrogen export from manured riparian pasture. J. Environ. Qual. 36:155-162.

10. **Franklin, D.H.**, M.L. Cabrera, L.T. West, V.H. Calvert and J.A Rema. 2006. Aerating Grasslands: Effects on Runoff and Phosphorus losses from applied broiler litter. J. Environ. Qual. 36:208-215.

11. **Franklin, D.H.**, C.C. Truman, T.L. Potter, D.D. Bosch, T.C. Strickland, and C.W. Bendnarz. 2006. Inorganic N & P runoff losses from variable and constant intensity rainfall simulations on loamy sand under conventional and strip tillage systems. J. Environ. Qual. 36:846-854.

12. Potter, Thomas L., Clint C. Truman, Timothy C. Strickland, David D. Bosch, Theodore M. Webster, **Dorcas H. Franklin**, and Craig W. Bednarz. 2006. Combined effects of constant versus variable intensity simulated rainfall and reduced tillage management on cotton preemergence herbicide runoff. J. Environ. Qual. 35:1894-1902.

13. Truman, C.C., T.C. Strickland, T.L. Potter, **D.H. Franklin**, D.D. Bosch, and C.W. Bednarz. 2007. Variable rainfall intensity and tillage effects on runoff, sediment, and carbon losses from a loamy sand under simulated rainfall. J. Environ. Qual. 36:1495-1502.

14. Sullivan, D.G. C.C. Truman, H.H. Schomberg, D.M. Endale, **D.H. Franklin**. 2007. Potential impact of conservation tillage on conserving water resources in Georgia. Journal of Soil and Water Conservation. 62:145-162.

15. **Butler, D.M.,* N.N. Ranells, **D.H. Franklin,** M.H. Poore, and J.T. Green, Jr. 2008. Runoff water quality from manured riparian grasslands with contrasting drainage and simulated grazing pressure. Agriculture, Ecosystems, and Environment. 126:250-260.

16. Jenkins M., C.C. Clinton, S.G. Siragusa, J.E. Line, J.S. Bailey, J.G. Frye, D.M. Endale, **D.H. Franklin**, H.H. Schomberg, D.S. Fisher, R.R. Sharpe. 2008. Rainfall and Tillage effects on transport of fecal bacteria and sex hormones 17β-estradiol and testosterone from broiler litter application to a Georgia Piedmont Ultisol. Science of the Total Environment. 403(1-3):154-163.

17. **Butler, D.M.,* **D.H. Franklin,** M.L. Cabrera, A.S. Tasistro, Kang Xia, L.T. West. 2008. Evaluating aeration techniques for decreasing phosphorus export from grasslands receiving manure. J. Environ. Qual. 37:1279-1287.

18. Michael B. Jenkins, Clint C. Truman, Gregory Siragusa, Eric Line, J. Stan Bailey, Jonathan Frye, Dinku Endale, **Dorcas H. Franklin**, Harry H. Schomberg, Swight S. Fisher, Fonald R. Sharpe. 2008. Corrigendum to "Rainfall and tillage effects on transport of fecal bacteria and sex hormones 17β-estradiol and testosterone from broiler litter applications to a Georgia Piedmont Ultisol". Science of the Total Envoronment 403:154-163.

19. Endale, Dinku M., Harry H. Schomberg, Michael B. Jenkins, **Dory H. Franklin**, Dwight S. Fisher. 2009. Management implication of conservation tillage and poultry litter use for Southern Piedmont USA cropping systems. Nutr Cycl Agroecosyst. On-line. Doi:10.1007/s/0705-009-938-Z.

20. **Franklin, D.H.**, M.L. Cabrera, H.L. Byers, M.K. Matthews, J.G. Andrae, D.E. Radcliffe, M.A. McCann, H.A. Kuykendall, C.S. Hoveland and V.H. Calvert, II. 2009. Impact of water troughs on cattle use of riparian zones in the Georgia Piedmont in the United States. J Anim Sci 87:2151-2159.

21. **Butler, D.M.,* **D.H. Franklin,** M.L. Cabrera, L.M. Risse, D.E. Radcliffe, L.T. West, and J.W. Gaskin. 2010. Assessment of the Georgia P Index on-farm at the field-scale for grassland management. J. Soil and Water Conservation 65:200-210.

22. **D.H. Franklin**, D.M. Butler, M.L. Cabrera, V.H. Calvert II, L.T. West, and J.A. Rema. 2011. Influence of Aeration Implements, Phosphorus Amendment and Soil Taxa on Phosphorus Losses from Grasslands. J. Environ. Qual. 40 (2): 312-319 (Invited).

23. Vadas, Peter A., William E. Jokela, **Dorcas H. Franklin**, Dinku M. Endale. 2011. The effect of changing storm hydrology when assessing timing of manure application and phosphorus loss in runoff. JAWRA 47(4):877-886.

24. Franzluebbers, Alan J., John A. Stuedemann, and **Dorcas H. Franklin**. 2012. Water infiltration and surface-soil structural properties with animal traffic in the Southern Piedmont, USA. Renewable Agriculture and Food Systems 27(4):256-265

25. Truman, C.C., T.L. Potter, Nuti, R.C., **D.H. Franklin**, and D.D. Bosch. 2011. Antecedent water content effects on runoff and sediment yields from two Coastal Plain Ultisols. Ag. Wat. Mgt. Agricultural Water Management 98:1189-1196.

26. **Franklin, D.H.**, C.C. Truman, T.L. Potter, D.D. Bosch, C.W. Bendnarz , T.C. Strickland, M.B. Jenkins, R.C. Nuti. 2012. Nutrient losses in runoff from conventional and no-till pearl millet on pre-wetted Ultisols fertilized with broiler litter. Agricultural Water Management 113:38-44.

27. Strickland, T.C., T.L. Potter, C.C. Truman, D.H. Franklin, D.D. Bosch, G.L. Hawkins. 2012. Results of rainfall simulation to estimate sediment-bound carbon and nitrogen loss from an Atlantic Coastal Plain (USDA) ultisol. Soil and Tillage Research. 122:12-21.

28. **Franklin, D.H.** J.L. Steiner, S.E. Duke, D.N, Moriasi, and P.J. Starks. 2013. Spatial and temporal considerations for dissolved phosphorus in streams of the Fort Cobb watershed, USA. (J. Amer. Wat. Res. Assoc. 49 (4) 908-922.

29. Jenkins, M.B., H.H. Schomberg, D.M. Endale, **D.H. Franklin**, D.S. Fisher. 2013. Hydrologic transport of Fecal bacteria attenuated by flue gas desulfurization gypsum. J. Environ. Qual. 42:1-6).

30. Endale, D.M., H.H. Schomberg, **D. H. Franklin**, M.B. Jenkins, D.S. Fisher. 2014. Flue gas desulfurization gypsum: Implication for runoff and nutrient losses associated with broiler litter use on pastures on Ultisols. **2014** (Vol. 43 No. 1, p. 281-289).

31. Kim, Keewook, Gene Whelan, S. Thomas Purucker, Thomas F. Bohrmann, Michael J. Cyterski, Marirosa Molina, Yin Gu, Yakov Pachepsky, Andrey Guber, and **Dorcas H. Franklin**. 2013. Rainfall-runoff model parameter estimation and uncertainty evaluation on small plots. Hydrol. Process (wileyonlinelibrary.com) DOI: 10.1002/hyp.10001.

32. D.M. Endale, A.J. Franzluebbers, J.A. Stuedemann, D.S. Seman, **D.H. Franklin**, and H.H. Schomberg. 2013. Runoff under natural rainfall from small fescue catchments in the Georgia Piedmont, United States. JSWC 68(6):474-486.

Other Publications

1. **Franklin, D.H.** (*ed.*), M.L. Cabrera, A.J. Franzluebbers, L.M. Risse, D.H. Seman, J.L. Steiner, J.A. Stuedemann, and S.R. Wilkinson. 1998. Nutrient cycles in the Southern Piedmont: A

workbook for managing nutrients at the watershed scale. University of Georgia Miscellaneous Departmental Publication Number ENG98-012, Athens, GA. (Workbook and Chapter)

2. **Franklin, D.H.** Morphological evaluation and quantification of flow paths in a Georgia Piedmont Soil. Univ. of Georgia. 75pp. 1994. (Thesis)

3. **Franklin, D.H.**, M.L. Cabrera, J.L. Steiner, D.M. Endale, and W.P. Miller. 1999. Evaluation of a small in-field runoff collector. In K.J. Hatcher (*ed.*). Proceedings of the 1999 Georgia Water Resources Conference. pp. 275-278. The University of Georgia. (Proceedings)

4. **Franklin, D.H.** 2000. Aspects of water quality in the Southern Piedmont: Attitudes, nutrients, and management for two typical agricultural watersheds. Univ. of Georgia. 157 pp. (Dissertation)

5. **Franklin, D.H.**, L.A. Risse, J.L. Steiner, M.L. Cabrera, and L.M. Risse. 2000. Producer assessment of sustainable land management practices to protect water quality. Proceedings of the First National Conference on Grazing Lands, Grazing Lands Conservation Initiative. Las Vegas, December, 2000. pp. 343-358. 2000. (Proceedings)

6. **Franklin, D.H.**, J.L. Steiner, and G. Wheeler. 2001. Comparison of different methods of measuring turbidity for estimation of total suspended sediments. In K.J. Hatcher (*ed.*). Proceedings of the 2001 Georgia Water Resources Conference, Athens, GA. pp. 383-386. 2001. (Proceedings)

7. **Franklin, D.H.**, M.L. Cabrera, J.L. Steiner, L.M. Risse. 2001. A Water Quality Perspective from Two Agricultural Southern Piedmont Watersheds: Nitrate in Runoff, Storm Flow and Base Flow. Proceedings of International Symposium Addressing Animal Production and Environmental Issues, Research Triangle Park, NC. pp. 558 -567. (Invited) (Proceedings)

8. **Franklin, D.H.**, M. L. Cabrera, J.L. Steiner, L.A. Risse, L. M. Risse and H.E. Hibbs. 2003. Watershed Assessment through Ecological Research/Farmers Active in Research. Proceedings of the 2003 Georgia Water Resources Conference, held April 23-24, 2003, at the University of Georgia, Kathryn J. Hatcher, (*ed.*). Institute of Ecology, The University of Georgia, Athens, Georgia. (Proceedings)

9. **Butler, D.M.*, N.N. Ranells, J.T. Green, Jr., **D.H. Franklin**, M.H. Poore. 2004. Impact of ground cover on runoff and export of nutrients and sediment from riparian pasture. (Proceedings of the 2004 American Forage and Grassland Council).

10. Endale, DM, Franzluebbers AJ, Stuedemann JA, Hill NS, **Franklin D.H.** 2005. Hydrologic and water quality implication of management of tall fescue pastures in a Southern Piedmont environment. pp 482-485. In K.J. Hatcher (ed.) Proceedings of the 2005 Georgia Water Resources Conference, April 25-27, 2005, Athens, GA. Institute of Ecology, UGA, Athens, GA. (Proceedings)

11. **Butler, D.M.*, D.**H. Franklin**, M.L. Cabrera, A.S. Tassistro, X. Kang. 2007. Mechanical aeration to reduce P export from manured grasslands. p. 332-333. In K.J. Hatcher (ed.) Proceedings of the 2007 Georgia Water Resources Conference, Mar 27-29, 2007, Athens, GA. Institute of Ecology, UGA, Athens, GA. (Proceedings)

12. *Dunn, K.C., Escalante, C.L., Lacy, R.C., Ziehl, A.R., **Franklin, D.H.**, Gaskin, J.W. 2008. Evaluating the Use of Pearl Millet to Reduce Nutrient Run-Off in the Southeast Piedmont Region of Georgia. SCASC 2008 Proceedings. (Proceedings)

13. Truman C.C., **Franklin, D.H.**, Schomberg, H.H., Endale, D.M. 2008. Soil and water conservation via reduced tillage in the GA Piedmont. In: D.M. Endale (ed.) Proceedings 30th Southern Agricultural Systems Conference, July 29-31, 2008, Tifton, Georgia. p. 74-78. (Proceedings)

14. Sauer, Thomas J., John Norman, Michael Nelson, Cal De Witt, Fred Kirschenmann, Sebastian Braum, Eric Brevik, Tom Bruulsema, Robert Dobos, **Dorcas Franklin**, Anne Hallum, Robert Horton, Amy Kaleita-Forbes, Mary Beth Kirkham, Tyson Ochsner, Jean Steiner, John Tunink. 2009. An urgent appeal for soil stewardship. Bouyoucos Conference on soil Stewardship in an Era of Global Climate Change - June 1-3, 2009 in Nebraska City, NE.

15. **Franklin, Dorcas H.,** Jean L. Steiner, Patrick J. Starks, Daniel N. Moriasi, and Sara E. Duke. 2011. Dissolved P in streams in dry years and in wet years. Doi:*www.gawrc.org/2011paper_pdfs/5.2.2Franklin.pdf.* In C.D. Carroll (ed.) Proceedings of the 2011 Georgia Water Resources Conference , April 11-13, 2011, Athens, GA, ISBN: 0-9794100-2-9.

16. Schomberg, H.H., D.S. Fisher, D.M. Endale, **D.H. Franklin**, and M.B.Jenkins. 2011. Evaluation of FGD-Gypsum to improve forage production and reduce phosphorus losses from Piedmont soils. 2011 World of Coal Ash Conference, May 9-12, 2011, Denver, CO. DOI: http://www.flyash.info/2011/148-Schomberg-2011.pdf.

Manuscripts Submitted for Publication:

Wyngaard, Nicolás, **Franklin, Dorcas H.,** Habteselassie, Mussie Y., Cabrera, Miguel L. Legacy effect of fertilization and tillage systems on nitrogen mineralization and microbial communities in an Ultisol. (SSSAJ)

Doydora, Sarah A., **Dorcas Franklin***, Peizhe Sun, Miguel Cabrera, Aaron Thompson, John Rema, Spyros G. Pavlostathis, and Ching-Hua Huang. Alum and Rainfall Effects on Ionophores in Runoff from Surface-applied Broiler Litter. (JEQ)

Butler, David M., **Dorcas H. Franklin**, Miguel L. Cabrera, Vaughn H. Calvert II, and J.A. Rema. Knife aeration of grasslands for decreasing phosphorus runoff from poultry litter. (JEQ)

Franklin, Dorcas H., Damla Bender-Ozenc, Nedim Ozenc and Miguel Cabrera Aerobic N mineralization and P Release from Composts and Soil Conditioners found in the Southeastern USA. (SSSAJ)