

Biographical Sketch

David Radcliffe

Professor

Crop and Soil Science Department
University of Georgia

EDUCATION AND TRAINING

Ph.D. Soil Physics, University of Kentucky, 1984.

M.S. Soil Physics, University of Kentucky, 1979.

B.S. Naval Science, United States Naval Academy, 1971

RESEARCH AND PROFESSIONAL EXPERIENCE

Research involves water movement and nutrient and sediment transport in agricultural systems and on-site wastewater systems and at the field and watershed scale. Research combines field measurements and modeling studies.

1997-current: Professor of Soil Physics, University of Georgia

1990-1997: Associate Professor of Soil Physics, University of Georgia

1984-1990: Assistant Professor of Soil Physics, University of Georgia

Board Member, Soil Science Society of America, S1 Division Representative, 2006 - 2013.

Member, SSSA Budget and Finance Committee, 2007 – 2013.

GRANTS RECEIVED 2011-2014

9/15/2011. Impacts of on-site wastewater treatment systems on water quality and quantity in urbanizing watersheds. USDA-NIFA. 3 years. \$599,827.

9/20/2012. Refine and regionalize southern phosphorus assessment tools based on validation and state priorities. 3 years. \$90,680.

3/1/2013. Tracking the impact of onsite wastewater treatment systems on stream water quality in the Metro-Atlanta area. 1 year. \$18,000.

HONORS AND AWARDS

Fellow, Soil Science Society of America, 2004.

Soil and Water Conservation Merit Award, Soil and Water Conservation Society of Georgia. 2007.

Outstanding Research Award from the USDA-NIFA Southern Region Water Program 2011.

Outstanding Reviewer Award from the Journal of Environmental Quality 2014.

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TEACHING

Soil Physics, fall semester each year
Introduction to Water Resources, fall semester each year
Advanced Soil Physics, spring semester alternate years
Watershed Modeling, spring semester alternate years

BOOKS AND BOOK CHAPTERS

1. *W.P. Miller and D.E. Radcliffe. 1992. Soil Crusting in the Southeastern U.S. *In* M.E. Sumner and B.A. Stewart (ed.) p. 233-266. Soil Crusting: Chemical and Physical Processes. Lewis Publ., Boca Raton, FL.
2. *D.E. Radcliffe and T.C. Rasmussen. 2000. Chapter four: Soil water movement. *In* M.E. Sumner (ed.) The Handbook of Soil Science. CRC Press, Inc. Boca Raton FL. pp A87-A127.
3. ¹*D.E. Radcliffe and T.C. Rasmussen. 2002. Chapter four: Soil water movement. *In* A. Warrick (ed.) Soil Physics Companion. CRC Press, Inc. Boca Raton FL. pp 85-126.
4. *D.E. Radcliffe. 2003. Water and solute movement in macropores. B.A. Stewart (ed.). Encyclopedia of Water Science. Marcel Dekker, Inc. pg. 843-846.
5. *D.E. Radcliffe and Z. Lin. 2006. Modeling phosphorus with the Hydrologic Simulation Fortran Program (HSPF) model. *In* D.E. Radcliffe and M.L. Cabrera (ed.). Modeling phosphorus in the environment. Taylor and Francis Group, LLC. pg 189-214.
6. Y. Pachepsky, D.E. Radcliffe, and H. M. Selim. 2003. Scaling methods in soil physics. CRC Press. Boca Raton, FL. 434 pg.
7. D.E. Radcliffe and M.L. Cabrera. 2006. Modeling phosphorus in the environment. Taylor and Francis Group, LLC.
8. D.E. Radcliffe and J. Šimůnek. 2010. Soil Physics with HYDRUS. Taylor and Francis. Boca Raton, FL.

REFEREED PUBLICATIONS

1. *D.E. Radcliffe, T. Hayden, K. Watson, P. Crowley, and R. E. Phillips. 1980. Simulation of soil water within the root zone of a corn crop. 19-24, *Agronomy J.*, Vol. 72.
2. *D. B. Egli, L. Meckel, R. E. Phillips, D.E. Radcliffe, and J. E. Leggett. 1983. Moisture stress and nitrogen redistribution in soybean. 1027-1031, *Agronomy J.*, Vol. 75.
3. *L. Meckel, D. B. Egli, R. E. Phillips, D.E. Radcliffe, and J. E. Leggett. 1984. Effect of moisture stress on seed growth in soybeans. 647-650, *Agronomy J.*, Vol. 76.

¹ This is a revision of the chapter first published as Radcliffe and Rasmussen (2000).

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4. *D. E. Radcliffe, R. E. Phillips, D. B. Egli, and L. Meckel. 1986. Experimental test of a model of water uptake by soybeans. *Agronomy J.* 78:526-530.
5. *D. E. Radcliffe, R. L. Clark, and M. E. Sumner. 1986. Effect of gypsum and deep-rooting perennials on soil mechanical impedance. *Soil Sci. Soc. Am. J.* 50:1566-1570.
6. *R. H. Brown and D. E. Radcliffe. 1986. A comparison of apparent photosynthesis in sericea lespedeza and alfalfa. *Crop Sci.* 26:1208-1211.
7. *D. S. NeSmith, W. L. Hargrove, E. W. Tollner, and D. E. Radcliffe. 1986. Comparison of soil surface moisture and bulk density sampling methods for various tillage practices. *Trans. Am. Soc. Ag. Eng.* 29:1297-1299.
8. *D. S. NeSmith, D. E. Radcliffe, W. L. Hargrove, R. L. Clark, and E. W. Tollner. 1987. Soil compaction in double-cropped wheat and soybeans on an Ultisol. *Soil Sci. Soc. Am. J.* 51:183-186.
9. *D. S. NeSmith, W. L. Hargrove, D. E. Radcliffe, and E. W. Tollner. 1987. Tillage and Residue management effects on properties of an Ultisol and double-cropped soybean production. *Agronomy J.* 79:570-576.
10. [#]*S. C. Chiang, D. E. Radcliffe, W. P. Miller, and K. D. Newman. 1987. Hydraulic conductivities of three southeastern soils as affected by sodium, electrolyte concentration, and pH. *Soil Sci. Soc. Am. J.* 51:1293-1299.
11. *D. E. Radcliffe, E. W. Tollner, W. L. Hargrove, R. L. Clark, and M. H. Golabi. 1988. Effect of tillage practices on infiltration and soil strength of a Typic Hapludult soil after ten years. *Soil Sci. Soc. Am. J.* 52:798-804.
12. *W. P. Miller, D. E. Radcliffe, and D. M. Miller. 1988. An historical perspective on the theory and practice of soil mechanical analysis. *J. of Agronomic Education* 17:24-28.
13. *M. Arechevalata, C. W. Bacon, C. S. Hoveland, and D. E. Radcliffe. 1989. Effect of the tall fescue endophyte on plant response to environmental stress. *Agronomy J.* 81:83-90.
14. *D. E. Radcliffe, G. Manor, R. L. Clark, L. T. West, G. W. Langdale, and R. R. Bruce. 1989. Effect of traffic and in-row chiseling on mechanical impedance. *Soil Sci. Soc. Am. J.* 53: 1196-1201.
15. [#]* K.A. McVay, D.E. Radcliffe, and W.L. Hargrove, 1989. Effect of winter legumes on soil properties and fertilizer - N requirements. *Soil Sci. Soc. Am. J.* 53: 1856-1862.
16. [#]* J.A. Tindall, H.A. Mills, and D.E. Radcliffe. 1990. Root zone temperature effect on nutrient uptake of tomato. *J. Plant Nutrition.* 13:939-956.
17. *D.E. Radcliffe, R.S. Hussey, and R.W. McClendon. 1990. Cyst nematode vs tolerant and intolerant soybean cultivars. *Agron. J.* 82:855-860.
18. *M.E. Sumner, D.E. Radcliffe, M. McCray, E. Carter, and R.L. Clark. 1990. Gypsum as an

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ameliorant for subsoil hardpans. *Soil. Technology*. 3:253-258.

19. *D.E. Radcliffe, L.T. West, G.O. Ware, and R.R. Bruce. 1990. Infiltration in adjacent Cecil and Pacolet soils. *Soil Sci. Soc. Am. J.* 54:1739-1743.

20. ^{H*} R.E. Jones, Jr., P.A. Banks, and D.E. Radcliffe. 1990. Alachlor and metribuzin movement and dissipation in a soil profile as influenced by soil surface condition. *Weed Sci.* 38:589-597.

21. *K.A. Tucker, K.J. Karnok, D.E. Radcliffe, G.W. Landry, Jr., R.W. Roncadori, and K.H. Tan. 1990. Localized dry spots as caused by hydrophobic sands on bentgrass greens. *Agronomy J.* 82:549-555.

22. *D.E. Radcliffe, L.T. West, R.K. Hubbard, and L.E. Asmussen. 1991. Surface sealing in Coastal Plains loamy sands. *Soil Sci. Soc. Am. J.* 55:223-227.

23. ^{H*} J.M. McCray, D.E. Radcliffe, and M.E. Sumner. 1991. Influence of solution Ca on water retention and soil strength of typic Hapludults. *Soil. Sci.* 151:312-316.

24. *G. Manor, E. W. Tollner, R. L. Clark, and D. E. Radcliffe. 1991. Large core sampler. *Applied Eng. in Agric.* 7:381-386.

25. *J.A. Tindall, R. B. Beverly, and D.E. Radcliffe. 1991. Mulch effect on soil properties and tomato growth using micro-irrigation. *Agron. J.* 88:1028-1034.

26. *G. Manor, R.L. Clark, D.E. Radcliffe, and G.W. Langdale. 1991. Soil cone index variability under fixed traffic tillage systems. *Trans. Am. Soc. Ag. Eng.* 34:1952-1956.

27. *J. M. McCray, M. E. Sumner, D. E. Radcliffe, and R. L. Clark. 1991. Soil Ca, Al, acidity and penetration resistance with subsoiling, lime and gypsum treatments. *Soil Use and Management* 7:193-199.

28. *M. Arechaveleta, C. W. Bacon, R. D. Plattner, C. S. Hoveland, and D. E. Radcliffe. 1992. Accumulation of ergopeptide alkaloids in symbiotic tall fescue grown under deficits of soil water and nitrogen fertilizers. *Applied and Environmental Microbiology.* 58:857-861.

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30. ^{H*}J. D. T. Kumwenda, D. E. Radcliffe, W. L. Hargrove, and D. C. Bridges. 1993. Reseeding of crimson clover and corn grain yield in a living mulch system. *Soil Sci. Soc. Am. J.* 57:517-523.

31. ^{H*}S. C. Chiang, D. E. Radcliffe, and W. P. Miller. 1993. Hydraulic properties of surface seals in Georgia soils. *Soil Sci. Soc. Am. J.* 57:1418-1426.

32. *R. L. Clark, D. E. Radcliffe, G. W. Langdale, and R. R. Bruce. 1993. Soil strength and water infiltration as affected by paratillage frequency. *Transactions of the Am. Soc. of Ag. Eng.* 36:1301-1305.

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33. ^{H*} S. C. Chiang, L. T. West, and D. E. Radcliffe. 1994. Morphological properties of surface seals in Georgia soils. *Soil Sci. Soc. Am. J.* 58:901-910.
34. *Wood, C. B., T. J. Smalley, M. Rieger, and D. E. Radcliffe. 1994. Growth and drought tolerance of *Viburnum plicatum* var. *tomentosum* 'Mariesii' in pine bark-amended soil. *J. Amer. Soc. Hort. Sci.* 119:687-692.
35. ^{H*}M. H. Golabi, D. E. Radcliffe, W. L. Hargrove, and E. W. Tollner. 1995. Macropore effects in conventional tillage and no-tillage soils. *J. Soil and Water Conserv.* 50:215-220.
36. *Michel, B. E. and D. E. Radcliffe. 1995. Computer program relating solute potential to solution composition for five solutes. *Agronomy J.* 87:126-130.
37. ^{H*}D. J. Drommerhausen, D. E. Radcliffe, D. E. Brune, and H. D. Gunter. 1995. Electromagnetic conductivity surveys of dairies for groundwater nitrate. *J. Environ. Qual.* 24:1083-1091.
38. *Bellini, G., M. E. Sumner, D. E. Radcliffe, and N. P. Qafoku. 1996. Anion transport through columns of highly weathered acid soil: adsorption and retardation. *Soil Sci. Soc. Am. J.* 60:132-137.
39. *Radcliffe, D. E., P. M. Tillotson, P. F. Hendrix, L. T. West, J. E. Box, and E. W. Tollner. 1996. Anion transport in a Piedmont Ultisol: 1. Field-scale parameters. *Soil Sci. Soc. Am. J.* 60:755-761.
40. ^{H*} 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: 2. Local-scale parameters. *Soil Sci. Soc. Am. J.* 60:762-770.
41. *J.N. Shaw, L.T. West, C.C. Truman, and D.E. Radcliffe. 1997. Morphologic and hydraulic properties of soils with restrictive horizons in the Georgia Coastal Plain. *Soil Sci.* 162:875-885.
42. *D.E. Radcliffe, S.M. Gupte, and J.E. Box. 1998. Solute transport at the pedon and polypedon scales. *Nutrient cycling in agroecosystems.* 50:77-84.
43. ^{H*}R.W. Vervoort, D.E. Radcliffe, M.L. Cabrera, and M. Latimore, Jr. 1998. Nutrient losses in surface and subsurface flow from pasture applied poultry litter and composted poultry litter. *Nutrient cycling in agroecosystems.* 50:287-290.
44. ^{H*}R.W. Vervoort, D.E. Radcliffe, M.L. Cabrera, and M. Latimore, Jr. 1998. Field-scale nitrogen and phosphorus losses from hayfields receiving fresh and composted broiler litter. *J. Environ. Qual.* 27: 1246-1254.
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1. ^{H*}R.W. Vervoort, D.E. Radcliffe, and L.T. West. 1999. Soil structure and preferential solute flow. *Water Resour. Res.* 35:913-928.

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45. Qafoku, N.P., U. Kukier, M.E. Sumner, W.P. Miller, and D.E. Radcliffe. 1999. Arsenate displacement from fly ash in amended soils. *Water, air, and soil pollution*. 114:185-198.
2. A.D. Johnson, M.L. Cabrera, D.V. McCracken, and D.E. Radcliffe. 1999. LEACHM simulations of nitrogen dynamics and water drainage for a Piedmont ultisol. *Agonomy J.* 91:597-606.
49. Qafoku, N.P., M.E. Sumner, and D.E. Radcliffe. 2000. Anion transport in columns of variable charge subsoils: Nitrate and chloride. *J. of Environ. Qual.* 29:484-493.
50. Shaw, J.N., L.T. West, D.E. Radcliffe, and D.D. Bosch. 2000. Preferential flow and pedotransfer functions for hydraulic and transport parameters in sandy kandiudults. *Soil Sci. Soc. Am. J.* 64:670-678.
51. Shaw, J.N., D.D. Bosch, L.T. West, C.C. Truman, and D.E. Radcliffe. 2001. Lateral flow in loamy to sandy Kandiudults of the upper coastal plain of Georgia (USA). *Geoderma*. 99:1-5.
52. Pierson, S.T., M.L. Cabrera, G.K. Evanylo, P. D. Schroeder, D.E. Radcliffe, H.A. Kuykendall, V.W. Benson, J.R. Williams, C.S. Hoveland, and M.A. McCann. 2001. Phosphorus losses from grasslands fertilized with broiler litter: EPIC simulation. *J. Environ. Qual.* 30:1790-1795.
53. Endale, D.M., M.L. Cabrera, J.L. Steiner, D.E. Radcliffe, W.K. Vencill, H.H. Schomberg, L.Lohr. 2002. Impact of conservation tillage and nutrient management on soil water and yield of cotton fertilized with poultry litter or ammonium nitrate in the Georgia Piedmont. *Soil & Tillage Research*. 66:55-68.
54. Endale, D. M., D. E. Radcliffe, J. L. Steiner, M. L. Cabrera. 2002. Drainage characteristics of a Southern Piedmont soil following six years of conventionally tilled or no-till cropping systems. *Trans ASAE*. 45:1423-1432.
55. Hutchison, J.M., J.C. Seaman, S.A. Aburime, and D.E. Radcliffe. 2003. Solute transport in variably saturated soil. *Vadose Zone Journal*. 2: 702-714.
56. McVay, K.A., D. E. Radcliffe, L.T. West, and M.L. Cabrera. 2004. Anion exchange in saprolite. *Vadose Zone Journal* 3: 668-675.
57. Schroeder, P.D., D.E. Radcliffe, M.L. Cabrera, and C.D. Belew. 2004. Relationship between soil test phosphorus and phosphorus in runoff: Effects of soil series variability. *J. Environ. Qual.* 33:1452-1463.
58. Schroeder, P.D., D.E. Radcliffe, M.L. Cabrera. 2004. Rainfall timing and litter application rate effect on phosphorus loss from surface-applied poultry litter. *J. Environ. Qual.* 33:2201-2209.
59. McVay, K.A., D.E. Radcliffe, M.L. Cabrera, and G. Hoogenboom. 2004. Water balance of a dairy loafing lot using geotextile and its impact on water quality. *J. Soil and Water Conserv.* 59: 142-153.
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system trenches. *Soil Sci. Soc. Am. J.* 69:1217-1224.

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65. Sangsupan, H.A., D.E. Radcliffe, P.G. Hartel, M.B. Jenkins, W.K. Vencill, and M.L. Cabrera. 2006. Sorption and transport of ^{17}O estradiol and testosterone in intact soil columns. *J. Environ. Qual.* 35:2261-2272.

66. 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.

67. Lin, Z., D.E. Radcliffe, M.B. Beck, and L.M. Risse. 2007. Modeling phosphorus in the upper Etowah River basin: Identifying sources under uncertainty. *Water Science and Technology.* 56: 29-37.

68. Finch, S.D., D.E. Radcliffe, and L.T. West. 2008. Modeling trench sidewall and bottom flow in on-site wastewater systems. *J. Hydrologic Eng.* 13: 693-701.

69. Radcliffe, D.E., Z. Lin, L.M. Risse, J.J. Romeis, and C.R. Jackson. 2009. Modeling phosphorus in the Lake Allatoona watershed using SWAT: I. Developing phosphorus parameter values. *J. Environ. Qual.* 38:111-120.

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73. 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, V.H. Calvert, II. 2009 Impact of water troughs on cattle use

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of riparian zones in the Georgia Piedmont in the United States. *J. Anim. Sci.* 87:2151-2159.

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90. Oliver, C.W., D.E. Radcliffe, L.M. Risse, M. Habteselassie, R. Mukundan, and J. Jeong. 2014. Quantifying the contribution of on-site wastewater treatment systems to stream discharge using the SWAT model. *J. Environ. Qual.* 43:539-548.
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