

Jerry M. Bigham

Professor Em. of Environment & Natural Resources

ADDRESS

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EDUCATION

B.Sc.	1971	Texas Tech University Major: Agronomy (Soil Science)
M.Sc.	1973	Texas Tech University Major: Soil Science (Pedology and Mineralogy)
Ph.D.	1977	North Carolina State University Major: Soil Science (Mineralogy and Chemistry) Minor: Materials Engineering

PROFESSIONAL EXPERIENCE

1969-1970	Soil Scientist Trainee with the U.S. Forest Service, Santa Fe, NM.
1971-1973	Graduate Research Assistant at Texas Tech University, Lubbock, TX.
1973-1977	Graduate Research Assistant at North Carolina State University, Raleigh, NC.
1977-1982	Assistant Professor of Soil Science, The Ohio State University, Columbus, OH.
1982-1992	Associate Professor of Soil Science, The Ohio State University, Columbus, OH.

1988-1989	Humboldt Scholar and Visiting Associate Professor, Lehrstuhl für Bodenkunde, Technische Universität München, Freising-Weihenstephan, Germany.
1992-present	Professor of Soil Science, The Ohio State University, Columbus, OH.
2002 - 2004	Research Coordinator, School of Natural Resources, The Ohio State University, Columbus, OH.
2004 - 2005	Interim Director, School of Natural Resources, The Ohio State University, Columbus, OH.
2005 - 2010	Director, School of Environment and Natural Resources, The Ohio State University, Columbus, OH.
2011	Interim Associate Chair, Dept. of Animal Sciences, The Ohio State University, Columbus, OH.
2010 - present	Professor Emeritus, The Ohio State University, Columbus, OH.

RECOGNITIONS AND AWARDS

Sparks Memorial Fellowship (Phi Kappa Phi) for graduate studies (1972)

Outstanding Faculty Member, Department of Agronomy, OSU (1980 student award)

Alfred J. Wright Outstanding Student Organization Faculty Adviser (1980 university award)

Alexander von Humboldt Research Fellowship, 1988-89 (Federal Republic of Germany)

Deutscher Akademischer Austauschdienst Visiting Scholar Award, 1994 (Federal Republic of Germany)

Fellow of the Soil Science Society of America, 1997

Jackson Mid-Career Award - Clay Minerals Society, 1997

Team Research Award - Ohio Agricultural Research and Development Center, 1998

Pomerene Teaching Award, CFAES and School of Natural Resources, 2001

Distinguished Alumnus, College of Agricultural Sciences and Natural Resources, Texas Tech University, 2008

Outstanding Faculty Member, SENR Alumni Society, 2010

PROFESSIONAL AND HONORARY SOCIETIES

Soil Science Society of America

International Soil Science Society

Clay Minerals Society

Phi Kappa Phi

Sigma Xi

RESEARCH INTERESTS

1. Soil genesis and geography
2. Influence of soil management on surface water quality
3. Iron oxides as indicators of environmental processes
4. Chemistry and mineralogy of iron in streams receiving acid mine effluents
5. Mineral alterations associated with biological leaching processes
6. Beneficial uses for coal combustion by-products

CLASSROOM TEACHING EXPERIENCE

ENR 753: Soil Mineralogy (5 credit hours). A graduate course devoted to the theory and application of methods for analyzing minerals in soil environments.

ENR 300.01: Basic Soil Science Lecture (3 credit hours). An undergraduate course emphasizing basic soil properties and management.

ENR 300.02: Basic Soil Science Laboratory (2 credit hours). An undergraduate course emphasizing basic soil properties and methods of analysis.

UNDERGRADUATE ADVISING

1. Faculty adviser to the OSU Crops and Soils (formerly Agronomy) Club (1978 - 1980; 1993-95; 1999 - present).
2. Coach of the OSU Soils Team (1978-1984, 1992-1994).

GRADUATE THESES AND DISSERTATIONS SUPERVISED

Brady, K.S. 1982. Iron precipitates from acid coal mine drainage in southeastern Ohio: origin, occurrence and regional significance. Ph.D. dissertation, The Ohio State Univ., Columbus, OH. 181 pp.

Heckendorn, S.E. 1985. Mineralogy and genesis of two soils with contrasting colors developed from fine-grained sedimentary rocks in southeastern Ohio. M.S. thesis. The Ohio State Univ., Columbus, OH. 125 pp.

Myers, J.A. 1985. Reduction in exchangeable magnesium upon liming acid soils of Ohio. Ph.D. dissertation. The Ohio State Univ., Columbus, OH. 131 pp.

Jaynes, W.F. 1988. Characterization and separation of soil clay minerals using ion exchange, lithium charge reduction, and density gradient techniques. Ph.D. dissertation. The Ohio State Univ., Columbus, OH. 230 pp.

Muñoz, M.A. 1988. Properties of synthetic goethites and their effect on sulfate adsorption. Ph.D. dissertation. The Ohio State Univ., Columbus, OH. 227 pp.

Winland, R.L. 1989. Acid coal mine drainage in Ohio: stream water quality, precipitate chemistry and mineralogy. M.S. thesis. Ohio State Univ., Columbus, OH. 227 pp.

Jones, F.S. 1994. Fragipan development in soils on Illinoian-age terraces of southern Ohio. M.S. thesis. The Ohio State Univ., Columbus, OH. 273 pp. Co-advised with Neil Smeck.

Costa, A.C.S. da 1996. Iron oxide mineralogy of soils derived from volcanic rocks in the Paraná River Basin, Brazil. Ph.D. dissertation, The Ohio State Univ., Columbus, OH. 243 pp.

Lepper, J.A.W. 1998. Iron oxide mineralogy and coloration of late Wisconsinan Maumee II beach ridge soils in northwestern Ohio. The Ohio State Univ., Columbus, OH. 209 pp.

- Williams, D.J. 1999. Spectral reflectance as an indicator of water quality in streams impacted by mine drainage. M.S. thesis. The Ohio State Univ., Columbus, OH.
- Ketterings, Q.M. 1999. Fire as a land management tool in Sepunggur, Sumatra, Indonesia. Can farmers do without it? Ph.D. dissertation, The Ohio State Univ., Columbus, OH. 283 pp.
- Levison, P.W. 2000. The influences of oxidation-reduction cycling on extractable potassium. M.S. thesis. The Ohio State Univ., Columbus, OH. 102 pp. Co-advised with Don Eckert.
- Lee, G. 2001. Transport and fate of trace metals in streams contaminated with acid mine drainage in the Ducktown Mining District, Tennessee. The Ohio State Univ., Columbus, OH. 250 pp. Co-advised with Gunther Faure.
- Gagliano, W.B. 2004. Biogeochemical characterization of a wetland constructed for acid mine drainage remediation. Ph.D. dissertation. The Ohio State Univ., Columbus, OH.

VISITING SCIENTISTS AND POST DOCTORAL RESEARCHERS

Dr. Liisa Carlson, University of Helsinki, Helsinki, Finland (visiting scientist)

Dr. Donald Post, University of Arizona, Tucson, Arizona (visiting scientist)

Dr. Tariq M. Bhatti, National Institute for Biotechnology and Genetic Engineering, Faisalabad, Pakistan (visiting scientist)

Dr. Oswaldo Garcia, Jr., Universidade Estadual Paulista, Araraquara, Brazil (visiting scientist)

Dr. Hongmei Wang, China University of Geosciences, Wuhan, PRC (visiting scientist)

Dr. Gudrun Gisladottir, University of Iceland, Reykjavik, Iceland (visiting scientist)

Dr. Richard C. Stehouwer (post doctoral researcher)

Dr. Humberto Yibirin (post doctoral researcher)

Dr. Valerie Laperche (post doctoral researcher)

Dr. Katerina Dontsova (post doctoral researcher)

Dr. Yong Bok Lee (post doctoral researcher)

Dr. Marcelo Batista (Brazilian sandwich program)

MAJOR DEPARTMENTAL AND UNIVERSITY SERVICE

Secretary of Agriculture Faculty Council (1983-1985)

OSU Council on Research and Graduate Studies (1986-1990). Member of Executive, Graduate Associate, and Policy and Standards Committees

Department of Agronomy Long Range Planning Committee (1986-1988)

The Ohio State University Task Force for Interdisciplinary Research and Graduate Education (1990-91)

Department of Agronomy Graduate Studies Committee, Chairman (1987-1988; 1991-1993)

Chair of Graduate Studies in Soil Science (1994 - 1998)

Chair of SNR Promotion and Tenure Committee (2000 - 2004)

SNR 2010 Planning Committee (2004)

PROFESSIONAL SERVICE

Associate Editor, *Soil Science Society of America Journal* Div. S-5 (1982-1985)

Associate Editor, *Soil Science Society of America Journal*, Div. S-9 (1985-1987)

Technical Editor, *Soil Science Society of America Journal*, Divs. S-5, S-9, & S-10 (1990-1993)

Editor-in-Chief, Soil Science Society of America (1994 - 1999)

Member of Editorial Committee, *Soil Micromorphology and Soil Classification* (1985) SSSA Spec. Publ. No. 15

Member of Editorial Committee, *Minerals in Soil Environments, 2nd Ed.*, (1987) SSSA Bk. Ser. No. 1., Madison, WI

Association of Ohio Pedologists, President (1991)

Symposium organizer and co-editor of *Soil Color*, 1993, SSSA Spec. Publ. No. 31

Chairman, Soil Science Society of America, Div. S-9, 1992

Co-Chairman, Clay Minerals Society Annual Meeting, 1992

Chairman, Clay Minerals Society, Student Grants Committee (1995 - 1997)

Chairman, Clay Minerals Society, Awards Committee (1998 – 2000)

Member, Clay Minerals Society, Publications Committee (2000 – 2003)

Member, Clay Minerals Society Executive Council (2003 – 2006)

Member, Clay Minerals Society Nominations Committee (2002 – 2006)

GRANTS AND CONTRACTS SINCE 1990

Granting Source: Consol Energy, Inc.

Project Title: Analysis of Alternatives for Restoring a Coal Slurry Impoundment and Refuse Pile at the Meigs No. 31 Mine Site: Assessment of Current Wildlife Utilization and Potential for Wildlife Habitat Development.

Principal Investigator(s): Gates, Bouchard, L. Williams, Slater and Bigham

Project Total: \$63,100 with 49.5% F&A

Duration: 2005 to 2006

Granting Source: Consol Energy, Inc.

Project Title: Meigs 2 Coarse Refuse Reclamation with Reduced Soil Cover

Principal Investigator(s): Jerry Bigham and David Barker

Project Total: \$353,836

Duration: 08/17/2004 to 08/16/2009

Granting Source: Ohio Coal Development Office, Ag Spectrum Company, and OARDC

Project Title: Improved Soil Quality and Increased Carbon Credits Through the Use of FGD-Gypsum to Enhance No-tillage Crop Production.

Principal Investigator(s): Warren Dick and Jerry Bigham

Project Total: \$510,429

Duration: 07/01/2003 to 06/30/2005

Granting Source: Ag Spectrum Company

Project Title: Interactions of FGD Calcium Sulfite with Soils and Plants

Principal Investigator(s): Jerry Bigham

Project Total: \$8,000

Duration: 01/01/2003 to 12/31/2003

Granting Source: USDA Agricultural Research Service
Project Title: Geochemical Factors Influencing Reservoir Sediment Quality
Principal Investigator(s): Jerry Bigham
Project Total: \$35,000
Duration: 08/31/2002 to 06/30/2007

Granting Source: Kansas State University
Project Title: Consortium for Agricultural Soils Mitigation of Greenhouse Gases (Task 1).
Principal Investigator(s): Jerry Bigham
Project Total: \$100,000
Duration: 04/01/2002 to 08/31/2004

Granting Source: National Aeronautics and Space Administration
Project Title: Acid Sulfate Drainage: A Model System for Understanding Potential Biomineralization Processes on Mars.
Principal Investigator(s): Jerry Bigham
Project Total: \$68,000
Duration: 09/01/2000 to 08/31/2003

Granting Source: Ag Spectrum Company
Project Title: Influence of Long- and Short-Term Drainage History on Concentrations of Extractable Potassium in Soils
Principal Investigator(s): Don Eckert and Jerry Bigham
Project Total: \$46,000
Duration: 09/01/1997 to 08/31/1999

Granting Source: USDA/CSRS
Project Title: Agricultural Pollution Prevention in the Lake Erie Basin: Analysis and Design
Principal Investigator(s): Frank Calhoun and David Baker
Project Total: \$1,000,000 (Bigham share = 10%)
Duration: 10/01/1995 to 09/30/1998

Granting Source: Ohio Coal Development Office and Dravo Lime Company
Project Title: Product Development and Utilization of Zimmer Station Wet FGD By-products
Principal Investigator(s): Jerry Bigham
Project Total: \$547,354
Duration: 11/01/1994 to 09/30/1997

Granting Source: OSU Targeted Interdisciplinary Seed Grant
Project Title: Sediment Record of Past and Present Urban Runoff in the Scioto River Drainage, Delaware, Franklin, and Pickaway Counties, Ohio
Principal Investigator(s): Lawrence Krissek and Jerry Bigham
Project Total: \$39,998
Duration: 07/01/1996 to 06/30/1997

Granting Source: Ohio Coal Development Office
Project Title: Land Application Uses of Dry FGD By-products
Principal Investigator(s): Warren Dick and Jerry Bigham (one year)
Project Total: \$4,120,000
Duration: 1990 to 1995

PUBLICATIONS

Publication Format	Career Total
Refereed Journal Articles	111
Book Chapters	17
Edited Books	2
Technical Bulletins & Reports	8
Abstracts and Presentations	153

Refereed Journal Articles

Bigham, J.M., D.C. Golden, L.H. Bowen, S.W. Buol, and S.B. Weed. 1978. Iron oxide mineralogy of well-drained Ultisols and Oxisols: I. Characterization of iron oxides in soil clays by Mössbauer spectroscopy, x-ray diffractometry and selected chemical techniques. *Soil Sci. Soc. Am. J.* 42:816-825.

Bigham, J.M., D.C. Golden, S.W. Buol, S.B. Weed, and L.H. Bowen. 1978. Iron oxide mineralogy of well-drained Ultisols and Oxisols: II. Influence on color, surface area and phosphate retention. *Soil Sci. Soc. Am. J.* 42:825-830.

Bigham, J.M., D.C. Golden, L.H. Bowen, S.W. Buol, and S.B. Weed. 1978. Mössbauer and x-ray evidence for the pedogenic transformation of hematite to goethite. *Soil Sci. Soc. Am. J.* 42:979-981.

Golden, D.C., L.H. Bowen, S.B. Weed, and J.M. Bigham. 1979. Mössbauer studies of synthetic and soil-occurring aluminum-substituted goethites. *Soil Sci. Soc. Am. J.* 43:802-808.

Bigham, J.M., W.F. Jaynes, and B.L. Allen. 1979. Pedogenic degradation of sepiolite and palygorskite on the Texas High Plains. *Soil Sci. Soc. Am. J.* 43:159-167.

Smeck, N.E., L.D. Norton^s, G.F. Hall, and J.M. Bigham. 1980. Computerized processing and storing of soil descriptions and soil characterization data. *Soil Sci. Soc. Am. J.* 44:649-652.

- Rhoton, F.E.^s, J.M. Bigham, L.D. Norton^s, and N.E. Smeck. 1981. Contribution of magnetite to oxalate-extractable iron in soils and sediments from the Maumee River Basin of Ohio. *Soil Sci. Soc. Am. J.* 45:645-649.
- Thompson, M.L.^s, N.E. Smeck, and J.M. Bigham. 1981. Parent materials and paleosols in the Teays River Valley, Ohio. *Soil Sci. Soc. Am. J.* 45:918-925.
- Norton, L.D.^s, J.M. Bigham, G.F. Hall, and N.E. Smeck. 1983. Etched thin sections for coupled optical and electron microscopy and micro-analysis. *Geoderma* 30:55-64.
- Norton, L.D.^s, G.F. Hall, N.E. Smeck, and J.M. Bigham. 1984. Fragipan bonding in a late Wisconsinan, loess-derived soil in east-central Ohio. *Soil Sci. Soc. Am. J.* 48:1360-1366.
- Jaynes, W.F.^s, and J.M. Bigham. 1986. Multiple cation-exchange capacity measurements on standard clays using a commercial mechanical extractor. *Clays Clay Min.* 34:93-98.
- Brady, K.S.^s, J.M. Bigham, W.F. Jaynes^s, and T.J. Logan. 1986. Influence of sulfate on Fe-oxide formation: Comparisons with a stream receiving acid mine drainage. *Clays Clay Min.* 34:266-274.
- Miller, J.W.^s, T.J. Logan, and J.M. Bigham. 1986. The adsorption of o-phosphate on alumina: A solid solution model. *Soil Sci. Soc. Am. J.* 50:609-616.
- Jaynes, W.F.^s, and J.M. Bigham. 1986. Separation of Fe-oxides from soil clays by density gradient centrifugation. *Soil Sci. Soc. Am. J.* 50:1633-1639.
- Ransom, M.D.^s, N.E. Smeck, and J.M. Bigham. 1987. Stratigraphy and genesis of polygenetic soils on the Illinoian till plain of southwestern Ohio. *Soil Sci. Soc. Am. J.* 51:135-141.
- Jaynes, W.F.^s, and J.M. Bigham. 1987. Charge reduction, octahedral charge, and lithium retention in heated, Li-saturated smectites. *Clays Clay Min.* 35:440-448.
- Ransom, M.D.^s, N.E. Smeck, and J.M. Bigham. 1987. Micromorphology of seasonally wet soils on the Illinoian Till Plain, U.S.A. *Geoderma* 40:83-89.
- Myers, J.A.^s, E.O. McLean, and J.M. Bigham. 1988. Reductions in exchangeable magnesium with liming of acid Ohio soils. *Soil Sci. Soc. Am. J.* 52:131-136.
- Ransom, M.D.^s, J.M. Bigham, N.E. Smeck, and W.F. Jaynes^s. 1988. Transitional vermiculite-smectite phases in Aqualfs of southwestern Ohio. *Soil Sci. Soc. Am. J.* 52:873-880.

- Che, M.^s, T.J. Logan, S.J. Traina, and J.M. Bigham. 1988. Properties of water treatment lime sludges and their effectiveness as agricultural limestone substitutes. *J. Water Poll. Control* 60:674-680.
- Grishin, S.I., J.M. Bigham, and O.H. Tuovinen. 1988. Characterization of biogenic jarosite formed upon bacterial oxidation of ferrous sulfate in a packed bed reactor. *Appl. Environ. Microbiol.* 54:3101-3106.
- Shipitalo, M.J.^s, N.E. Smeck, and J.M. Bigham. 1988. Influence of underlying material on the weathering of loess in Ohio. *Soil Sci.* 146:92-101.
- Jaynes, W.F.^s, J.M. Bigham, N.E. Smeck, and M.J. Shipitalo^s. 1989. Formation of a 1:1-2:1 interstratified mineral in a polygenetic soil from southern Ohio. *Soil Sci. Soc. Am. J.* 53:1888-1894.
- Amba, E.A.^s, N.E. Smeck, G.F. Hall, and J.M. Bigham. 1990. Geomorphic and pedogenic processes operative in soils of a representative hillslope in the unglaciated region of Ohio. *Ohio J. Sci.* 90:4-12.
- Murad, E., J.M. Bigham, L.H. Bowen, and U. Schwertmann. 1990. Magnetic properties of iron oxides produced by bacterial oxidation of Fe²⁺ under acid conditions. *Hyperfine Interactions* 58:2373-2376.
- Bigham, J.M., U. Schwertmann, L. Carlson, and E. Murad. 1990. A poorly crystallized oxyhydroxysulfate of iron formed by bacterial oxidation of Fe(II) in acid mine waters. *Geochim. Cosmochim. Acta* 54:2743-2758.
- Pierzynski, G.M.^s, T.J. Logan, S.J. Traina, and J.M. Bigham. 1990. Phosphorus chemistry and mineralogy in excessively fertilized soils: quantitative analysis of phosphorus-rich particles. *Soil Sci. Soc. Am. J.* 54:1576-1583.
- Pierzynski, G.M.^s, T.J. Logan, S.J. Traina, and J.M. Bigham. 1990. Phosphorus chemistry and mineralogy in excessively fertilized soils: descriptions of phosphorus-rich particles. *Soil Sci. Soc. Am. J.* 54:1583-1589.
- Winland, R.L.^s, S.J. Traina, and J.M. Bigham. 1991. Chemical composition of ochreous precipitates from Ohio coal mine drainage. *J. Environ. Qual.* 20:452-460.
- Bigham, J.M., S.E. Heckendorn^s, W.F. Jaynes^s, and N.E. Smeck. 1991. Stability of iron oxides in two soils with contrasting colors. *Soil Sci. Soc. Am. J.* 55:1485-1492.
- Jaynes, W.F.^s, S.J. Traina, J.M. Bigham, and C.T. Johnston. 1992. Preparation and characterization of reduced-charge hectorites. *Clays Clay Min.* 40:397-404.
- Muñoz, M.A.^s, and J.M. Bigham. 1992. Mineralogy of Nipe clay. *J. Agr. Univ. Puerto Rico.* 76:107-117.

- Rhoton, F.E., E.H. Grossinger, and J.M. Bigham. 1993. An improved suction apparatus for plating clay specimens. *J. Sediment. Petrol.* 63:763-765.
- Bhatti, T.M.,^{vs} J.M. Bigham, L. Carlson, and O.H. Tuovinen. 1993. Mineral products of pyrrhotite oxidation by *Thiobacillus ferrooxidans*. *Appl. Environ. Microbiol.* 59:1984-1990.
- Rhoton, F.E., J.M. Bigham, and D.G. Schulze. 1993. Properties of iron-manganese nodules from a sequence of eroded fragipan soils. *Soil Sci. Soc. Am. J.* 57:1386-1392.
- Smeck, N.E., H.T. Saif^s, and J.M. Bigham. 1994. Formation of Mg-Al double hydroxide in soils of southeastern Ohio. *Soil Sci. Soc. Am. J.* 58:470-476.
- Lindbo, D.L., F.E. Rhoton, J.M. Bigham, W.H. Hudnall, F.S. Jones, N.E. Smeck, and D.D. Tyler. 1994. Bulk density and fragipan identification in loess soils of the lower Mississippi River Valley. *Soil Sci. Soc. Am. J.* 58:884-891.
- Tuovinen, O.H., T.M. Bhatti^{vs}, J.M. Bigham, K.B. Hallberg, O. Garcia, Jr.^{vs}, and E.B. Lindström. 1994. Oxidative dissolution of arsenopyrite by mesophilic and moderately thermophilic acidophiles. *Appl. Environ. Microbiol.* 60:3268-3274.
- Bigham, J.M., L. Carlson, and E. Murad. 1994. Schwertmannite, a new iron oxyhydroxysulfate from Pyhäsalmi, Finland, and other localities. *Mineral. Mag.* 58:641-648.
- Lindbo, D.L., F.E. Rhoton, J.M. Bigham, W.H. Hudnall, F.S. Jones, N.E. Smeck, and D.D. Tyler. 1995. Loess toposequences in the lower Mississippi River Valley: I. Fragipan morphology and identification. *Soil Sci. Soc. Am. J.* 59:487-500.
- Schwertmann, U., J.M. Bigham, and E. Murad. 1995. The first occurrence of schwertmannite in a natural stream environment. *Eur. J. Mineral.* 7:547-552.
- Garcia, Jr., O.^{vs}, J.M. Bigham, and O.H. Tuovinen. 1995. Oxidation of galena by *Thiobacillus ferrooxidans* and *Thiobacillus thiooxidans*. *Can. J. Microbiol.* 41:508-514.
- Waychunas, G.A., N. Xu, C.C. Fuller, J.A. Davis, and J.M. Bigham. 1995. XAS study of AsO_4^{3-} and SeO_4^{2-} substituted schwertmannites. *Physica B* 208&209:481-483.
- Garcia Jr., O.^{vs}, J.M. Bigham, and O.H. Tuovinen. 1995. Sphalerite oxidation by *Thiobacillus ferrooxidans* and *Thiobacillus thiooxidans*. *Can. J. Microbiol.* 41:578-584.

- Bigham, J.M., U. Schwertmann, S.J. Traina, R.L. Winland^s, and M. Wolf. 1996. Schwertmannite and the chemical modeling of iron in acid sulfate waters. *Geochim. Cosmochim. Acta* 60:2111-2121.
- Burras, C.L.^s, N.E. Smeck, and J.M. Bigham. 1996. Origin and properties of smectite in loess-derived soils of western Ohio. *Soil Sci. Soc. Am. J.* 60:1961-1968.
- Bigham, J.M., U. Schwertmann, and G. Pfab. 1996. Influence of pH on mineral speciation in a bioreactor simulating acid mine drainage. *Appl. Geochim.* 11:845-849.
- Lindbo, D.L., F.E. Rhoton, W.H. Hudnall, N.E. Smeck, and J.M. Bigham. 1997. Loess stratigraphy and fragipan occurrence in the lower Mississippi River Valley. *Soil Sci. Soc. Am. J.* 61:195-210.
- Garcia Jr., O.,^{vs} J.M. Bigham, and O. Tuovinen. 1997. Oxidative dissolution of research-grade minerals by *Thiobacillus ferrooxidans* and *Thiobacillus thiooxidans*. *Rev. Microbiologia* 28:95-100.
- Saif, H.T.^s, N.E. Smeck, and J.M. Bigham. 1997. Pedogenic influence on base saturation and calcium/magnesium ratios in soils of southeastern Ohio. *Soil Sci. Soc. Am. J.* 61:509-515.
- Costa, A.C.S. da^s, J.M. Bigham, F.E. Rhoton, and S.J. Traina. 1999. Quantification and characterization of maghemite in soils derived from volcanic rocks in southern Brazil. *Clays Clay Min.* 47:466-473.
- Levison, P.W.^s, D.J. Eckert, and J.M. Bigham. 2000. Oxidation-reduction state of Fe and extractable K in a whole soil. *Commun. Soil Sci. Plant Anal.* 31:2093-2100.
- Ketterings, Q.M.^s, J.M. Bigham, and V. Laperche^{pd}. 2000. Changes in soil mineralogy and texture caused by slash-and-burn fires in Sumatra, Indonesia. *Soil Sci. Soc. Am. J.* 64:1108-1117.
- Lindbo, D.L., F.E. Rhoton, W.H. Hudnall, N.E. Smeck, J.M. Bigham, and D.D. Tyler. 2000. Fragipan degradation and nodule formation in Glossic Fragiudalfs of the lower Mississippi River Valley. *Soil Sci. Soc. Am. J.* 64:1713-1722.
- Ketterings, Q.^s, and J.M. Bigham. 2000. Soil color as an indicator of slash-and-burn fire severity and soil fertility in Sumatra, Indonesia. *Soil Sci. Soc. Am. J.* 64:1826-1833.
- Fausey, N.R., G.F. Hall, J.M. Bigham, B.J. Allred, and A.D. Christy. 2000. Properties of the fractured glacial till at the Madison County, Ohio, field workshop pit site. *Ohio J. Sci.* 100:107-112.

- Bigham, J.M., T.M. Bhatti^{vs}, A. Vuorinen, and O.H. Tuovinen. 2001. Dissolution and structural alteration of phlogopite mediated by proton attack and bacterial oxidation of ferrous iron. *Hydrometallurgy* 59:301-309.
- Calhoun, F.G., N.E. Smeck, B.K. Slater, J.M. Bigham, and G.F. Hall. 2001. Predicting bulk density of Ohio soils from morphology, genetic principles, and laboratory characterization data. *Soil Sci. Soc. Am. J.* 65:811-819.
- Calhoun, F. G., J. M. Bigham and B. K. Slater. 2002. Relationships among plant available phosphorus, fertilizer sales, and water quality in northwestern Ohio. *J. Environ. Qual.* 31:38-46.
- Rhoton, F.E., J.M. Bigham, and D.L. Lindbo. 2002. Properties of iron oxides in streams draining the loess uplands of Mississippi. *Appl. Geochem.* 17:409-419.
- Munk, L.^s, G. Faure, D.E. Pride, and J.M. Bigham. 2002. Sorption of trace metals to an aluminum precipitate in a stream receiving acid rock-drainage; Snake River, Summit County, Colorado. *Appl. Geochem.* 17:421-430.
- Lee, G.^s, J.M. Bigham, and G. Faure. 2002. Removal of trace metals by coprecipitation with Fe, Al, and Mn from natural waters contaminated with acid mine drainage in the Ducktown Mining District, Tennessee. *Appl. Geochem.* 17:569-581.
- Carlson, L.^{vs}, J.M. Bigham, U. Schwertmann, A. Kyek, and F. Wagner. 2002. Scavenging of As from acid mine drainage by schwertmannite and ferrihydrite: A comparison with synthetic analogues. *Environ. Sci. Technol.* 36:1712-1719.
- Laperche, V.^{pd}, and J.M. Bigham. 2002. Quantitative chemical and mineralogical characterization of flue gas desulfurization by-products. *J. Environ. Qual.* 31:979-988.
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Journal	No. of Articles	Journal Ranking (2009)*
Soil Science		
Soil Sci. Soc. Am. J.	37	7 of 31
Geoderma	2	5 of 31
Soil Sci.	3	24 of 31
Comm. Soil Sci. Plant Anal.	1	29 of 31
Ohio J. Sci.	3	N.A. [†]
J. Agric. Univ. Puerto Rico	1	N.A.
R. Bras. Ci. Solo	1	27 of 31
Quat. Res.	1	N.A.
Vadose Zone J.	1	11 of 31
Mineralogy		
Clays Clay Miner.	6	11 of 27
Eur. J. Mineral.	1	9 of 27
Mineral. Mag.	1	20 of 27
Clay Miner.	1	18 of 27
Thermochim. Acta	1	N.A.
J. Sediment. Petrol.	1	N.A.
Int. J. Mineral Processing	3	14 of 27
Minerals Eng.	1	12 of 27
Geochemistry		
Geochim. Cosmochim. Acta	5	2 of 75
Appl. Geochem.	5	21 of 75
Environmental Science		
Environ. Sci. Technol.	2	7 of 180
J. Environ. Qual.	9	54 of 180
Agric. Ecosyst. Environ.	1	3 of 180
J. Water Poll. Control	1	N.A.
Fuel	2	N.A.
J. Hazard. Materials	1	10 of 180
Geomicrobiology J.	5	75 of 180
Microbiology		
Appl. Environ. Microbiol.	3	25 of 94
Can. J. Microbiol.	3	79 of 94
Rev. Microbiologia	1	N.A.

Metallurgy & Metall. Eng.

Hydrometallurgy	5	6 of 70
Materials Sci. Eng.	1	N.A.

Physics

Hyperfine Interactions	1	N.A.
Physica B	1	N.A.

*ISI Journal Citation Reports †N.A. = not available in the journal category listed

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Non-refereed Abstracts and Presentations (1976 – 2012)

Local/Regional	Extension	National	International
19	19	93	27