

curriculum vita

Donald Greg McGahan

1334 Via Colonna Terrace
Davis, CA 95618-6737
530.753.0790 (home)
530.574.7121 (mobile)
dig.soilman@yahoo.com

Education

2001–2007 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Ph.D. Soils and Biogeochemistry.

165 quarter units earned.

Dissertation: A Survey of Soils Formed on Serpentinic Landscapes in California. Adviser: Dr. Randal J. Southard.

1997–2001 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

MS, Soil Science.

161 quarter units earned.

Thesis: Mineralogical and chemical properties of agriculturally acidified soils in comparison with naturally acidic soils. Adviser: Dr. Randal J. Southard and Dr. Robert J. Zasoski.

1995–1997 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

BS, Soil and Water Science

81 quarter units earned.

Internship Research - characterization and analysis of soil minerals resulted in presentation of findings at 1998 American Society of Agronomy, Crop Science Society of America, Soil Science Society of America Annual Meetings.

1991–1997 AMERICAN RIVER COLLEGE SACRAMENTO, CA

AS, Math and Physical Science

86 semester units earned.

Teaching Experience

2007 TO PRESENT SIERRA COLLEGE ROCKLIN, CA

Professor of Agriculture

Introduction to Soil Science course. A UC and CSU transferable course.

2006, 2007 UNIVERSITY OF CALIFORNIA EXTENSION, DAVIS DAVIS, CA
Instructor Japanese Agriculture Training Program.
Provided interactive instruction about soil science to Japanese fruit and vegetable production group. The JAPT is a 2 year agricultural exchange program.

FALL 2005 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA
Teaching Assistant, Graduate Pedology
Designed adaptation to mineralogical preparation techniques allowing greater student analysis time. Instructed students individually and in small groups on soil mineralogy topics. *Supervisor: Randy J. Southard, Ph.D.*

2004, 2003, 2002, 2000, 1999 CENTER FOR LAND-BASED LEARNING DAVIS, CA
Workshop presenter/lecturer. Farming, Agriculture and Resource Management for Sustainability (FARMS) field day.
Organized and presented lessons incorporating geology, chemistry, and physics to introduce high school students to soil as a dynamic living system.

SPRING 2001 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA
Teaching Assistant/Laboratory Instructor, Soil Genesis, Morphology and Classification
Lectured and instructed students in the principles of mineral weathering, soil genesis, soil morphological descriptions, and classification. Demonstrated methods and answered students' questions about rocks, minerals, the use of maps, and aerial photographs in soil science and instructed students in conventions of describing and recording soil morphology in a classroom and field settings. *Supervisor: Randal J. Southard, Ph.D.*

FALL 2000 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA
Tutor Learning Resource Center
Fielded questions, explained principles, answered questions. Primarily tutored students enrolled in upper division soils courses.

SPRING 2000 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA
Lecturer, Soil Genesis, Morphology and Classification
Three Lectures. Solely responsible for lecture content and instruction of modules on the principles of mineral weathering, soil genesis and classification. *Supervisor: Randal J. Southard, Ph.D.*

SPRING 2000 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA
Teaching Assistant/Laboratory Instructor, Soil Genesis, Morphology and Classification
Lectured and instructed students in the principles of mineral weathering, soil genesis, and soil classification. Demonstrated methods and answered students' questions about rocks, minerals, the use of maps, aerial photography use in soil science, and instructed students in conventions of describing and recording soil morphology in classroom and field settings. *Supervisor: Randy J. Southard, Ph.D.*

SUMMER 2000 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Associate-Instructor, Field Studies of Soil Resources

Independent and group: classroom and in the field (at fresh soil profiles) lectures, demonstrating and comparing techniques and methods used in soils, earth, biological and natural sciences.

Supervisor: Michael J. Singer, Ph.D.

SPRING 1999 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Teaching Assistant/Laboratory Instructor, Soil Genesis, Morphology and Classification

Lectured and instructed students in the principles of mineral weathering, soil genesis and classification. Demonstrated methods and answered students' questions about rocks, minerals, the use of maps, and aerial photographs in soil science and instructed students in conventions of describing and recording soil morphology in a classroom and field settings. *Supervisor: Randy J. Southard, Ph.D.*

SUMMER 1999 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Associate-Instructor, Field Studies of Soil Resources

Independent and group: classroom and in the field lectures, demonstrating and comparing techniques and methods used in soils, earth, biological and natural sciences. *Supervisor: Randy A. Dahlgren, Ph.D.*

SPRING 1998 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Teaching Assistant/Laboratory Instructor, Soil Genesis, Morphology and Classification

Lectured and instructed students in the principles of mineral weathering, soil genesis and classification. Demonstrated methods and answered students' questions about rocks, minerals, the use of maps, and aerial photographs in soil science and instructed students in conventions of describing and recording soil morphology in a classroom and field settings. *Supervisor: Randy J. Southard, Ph.D.*

SUMMER 1998 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Associate-Instructor, Field Studies of Soil Resources

Independent and group: In the field lectures, demonstrating and comparing techniques and methods used in soils, earth, biological and natural sciences. *Supervisor: Ron Amundson, Ph.D.*

SPRING 1997-2005 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Technical Support FFA Land Judging

Provided technical support including assisting in selecting example soil profile locations.

Supervisors: Michael J. Singer, Ph.D., Randy A. Dahlgren, Ph.D., Randy J. Southard, Ph.D., Toby O'Geen Ph.D.

SUMMER 1997 UNIVERSITY OF CALIFORNIA, DAVIS DAVIS, CA

Technical Assistant, Soil Science Institute

Provided technical support including producing example x-ray diffractograms, and assisting in selecting example soil profile locations for field trips. *Supervisor: Randy J. Southard, Ph.D.*

Research Experience

2007

UNIVERSITY OF CALIFORNIA, DAVIS

DAVIS, CA

Ph.D. Research

Conceptualized field research strategy, negotiated sample site permissions from landowners (private and public), sampled and characterized eleven soil profiles and parent materials, and inventoried vegetation cover at sample locations across California. Performed micromorphology on parent material by plane light microscopy (PLM), identified and characterized the parent material mineralogy by PLM, X-ray diffraction (XRD), back scatter electron microscopy (BSE) and energy dispersive x-ray spectroscopy (EDX). Utilized elemental analysis and bulk density to construct mass balance for representative soils formed on serpentinite landscapes. Definitively linked parent material mineralogical composition to extractable Ca:Mg in soil and related soil Ca:Mg ratios to Ca and Mg content in a grass *Vulpia microstachys* (Nutt.) Munro grown in a common greenhouse environment.

2001

UNIVERSITY OF CALIFORNIA, DAVIS

DAVIS, CA

MS Research

Performed crystalline and amorphous mineralogical determinations using X-ray diffractometry, selective dissolution. determined, extractable cation, and cation exchange capacity by mechanical vacuum extractor, Atomic Adsorption and Inductively Coupled Plasma spectrometers.

Conceived and executed novel approach to create bulk rhizosphere soil, and using pore-water cation activities, constructed mineral stability diagrams to quantify differences in potential mineralogical changes and acidity sources/sinks in naturally acidic, agriculturally acidic and non-acidified soils.

1997

UNIVERSITY OF CALIFORNIA, DAVIS

DAVIS, CA

BS Research

Performed Particle Size Distribution by pipette method on grab samples in support of the Soil Survey of Colusa County. Fractionated clay and performed mineralogical analysis and comparison of coarse and fine clays by X-ray diffraction.

Research Skills

X-ray diffraction

SigmaPlot (Technical Graphs)

Optical Mineralogy (polarizing microscope)

Jade XRD Pattern Processing Software

Electron Probe Microanalysis

Pedon Characterization

Atomic Absorption Spectrometry

Soil Morphology

Inductively Coupled Plasma Spectrometry

Soil Taxonomy

FTIR (Fourier Transform Infrared)

Soil Laboratory Characterization Methods - including

Mineral Stability Diagrams
Elemental Analysis
Structural Formulas from Elemental Analysis
Selective Dissolution
ArcView GIS
Adobe FrameMaker (authoring and publishing)

Bulk Density
Particle Size Distribution Analysis
CEC (Cation Exchange Capacity) of Soils
Soil Gravimetric Water Content
C & N determinations
CaCO₃ equivalence

Employment Record

8/2007 – present Sierra College
Department of Agriculture
5000 Rocklin Road
Rocklin, CA 95677
Professor of Agriculture
Adjunct Class E, step 6
Supervisor: Michelle MacFarlane 916-789-2705

10/1997 – 6/2006 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Graduate Researcher
salary variable 23% to 100% of \$3322/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041

9/2005 - 12/2005 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant, Graduate Level Pedology
salary 50% of 3021/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041

3/2001 - 6/2001 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant, Soil Genesis, Morphology and Classification
salary 25% of \$3021/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041

3/2000 - 6/2000 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant, Soil Genesis, Morphology and Classification
salary 25% of \$3021/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041

- 6/2000 – 6/2000 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Associate Instructor, Field Studies of Soil Resources
salary \$2344/mo.
Supervisor: Michael J. Singer, Ph.D. Phone: 530-752-7499
- 3/1999 - 6/1999 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant, Soil Genesis, Morphology and Classification
salary 25% of \$2904/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041
- 7/1999 - 7/1999 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Associate Instructor, Field Studies of Soil Resources
salary \$2433/mo.
Supervisor: Randy A. Dahlgren,, Ph.D. Phone: 530-752-2814
- 3/1998 - 6/1998 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant, Soil Genesis, Morphology and Classification 25% of
\$2904/mo.
Supervisor: Randy J. Southard, Ph.D. Phone: 530-752-7041
- 7/1998 - 7/1998 University of California Davis
Department of Land, Air and Water Resources
One Shields Avenue, Davis CA 95616
Teaching Assistant/Associate Instructor, Field Studies of Soil Resources
\$2253/mo.
Supervisor: Supervisor: Ron Amundson, Ph.D. Phone: 510-643-7890
- 1984 – 9/1995 A&A Appliance
6700 Folsom Blvd. Sacramento CA 95819
Managing sales counselor - left to attend school full time
Supervisor: Mac McGahan, Phone: 916-452-4271

Publications

McGahan, D.G., R.J. Southard and V.P. Claassen. 2008. *In Press*. Tectonic Inclusions in Serpentinite Landscapes Contribute Plant Nutrient Calcium. SSSAJ.

Daniel Eric Rider, **Donald McGahan**, Victor Claassen., 2006. Ammonium Fixation in Selected California Decomposed Granites. *Plant and Soil* 289:289 - 300.
<http://dx.doi.org/10.1007/s11104-006-9138-8>

McGahan, D.G., R.J. Southard and R.J. Zasoski., 2003. Mineralogical comparison of agriculturally- acidified and naturally-acidic soils. *Geoderma* 114:355 - 368.
[http://dx.doi.org/10.1016/S0016-7061\(03\)00049-1](http://dx.doi.org/10.1016/S0016-7061(03)00049-1)

McGahan, D.G., R.J. Southard and V.P. Claassen. *In Departmental Review*. Plant-available Calcium Varies Widely In Soils On Serpentinic Landscapes. SSSAJ.

McGahan, D.G., R.J. Southard and V.P. Claassen. *In Departmental Review*. Determining Immobile Element Suitable for Mass Balance Calculations for Soils Formed on Serpentinic Landscapes. SSSAJ.

McGahan, D.G., R.J. Southard and V.P. Claassen. *In Departmental Review*. Flux of Elements by Mass Balance in Soils From Three Serpentinic Landscapes. SSSAJ.

McGahan, D.G., R.J. Southard. *In Departmental Review*. Trioctahedral phyllosilicates in a serpentinite-derived Vertisol. SSSAJ.

McGahan, D.G., R.J. Zasoski and R.J. Southard. *In Departmental Review*. Bulk and rhizosphere pH as indicators of soil quality: A comparison of agriculturally-acidified and naturally-occurring acid soils. *Geoderma*.

Oral Presentations

Donald G. McGahan, Randal J. Southard and Victor P. Claassen. 2005. Serpentinite Mineralogical Variation Impact on Vegetation Ca:Mg Ratios. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meeting; Agronomy Abstracts. Salt Lake City, Utah; Nov. 6 - 10.
<http://crops.confex.com/crops/2005am/techprogram/P8365.HTM>

McGahan, D.G., Southard, R.J., Claassen, V.P. 2005. Does Serpentinite Mineralogical Variation Affect Clay Mineralogy, Soil Mineralogical Class, and Ca:Mg Ratios? American Association for the Advancement of Science: Pacific Division. Ashland, OR. 24:1 June 12-16, 2005. p.71.

McGahan, D.G., Southard, R.J., Claassen, V.P. 2003. Soil Characteristics Affect Plant Establishment on an 11-Year-Old Serpentinite Road Cut in California. American Association for the Advancement of Science: Pacific Division. San Francisco, CA. 2:1:68 June 15-19 2003. p.68

McGahan, D.G., Southard, R.J., Zasoski R.J. 1999. Rhizosphere and Bulk Soil Solution Comparison and Mineral Stability. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meeting; Agronomy Abstracts. Salt Lake, UT; October 31 – November 4, 1999. p.206.

McGahan, D.G., Southard, R.J. 1998. Trioctahedral Phyllosilicates in a Serpentine-Derived Vertisol. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meeting; Agronomy Abstracts. Baltimore, MD; October 18-22, 1998. p.321.

McGahan, D.G., Southard, R.J., Zasoski, R.J. 1998. Mineralogical Comparison of Agriculturally-acidified and Naturally-acidic Soils. American Association for the Advancement of Science: Pacific Division. San Francisco, CA. 18:1:68 June 19-23. 1998.

Poster Presentations

McGahan, D.G., Southard, R.J., Claassen, V.P. 2004. A Lithosequence on Serpentinic Parent Material: Degree of Serpentinization. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America Annual Meeting; Agronomy Abstracts. Seattle, WA; October 31 - November 4.

McGahan, D.G., Southard, R.J., Claassen, V.P. 2003. Soil Characteristics Affect Plant Establishment on an 11-Year-Old Serpentine Road Cut in California. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Annual Meeting; Agronomy Abstracts. Denver, CO; November 2-6, 2003. p.68.

Murashkina-Meese, M., **McGahan, D.**, Rasmussen, C., Southard, R.J., Pettygrove, G.S. 2002. Potassium fixation potential predicted from SSURGO data in soils of the San Joaquin Valley, California. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America Annual Meeting. November 10-14. Indianapolis, IN. 2002.

Rasmussen, C., **McGahan, D.G.**, Pettygrove, G.S., Murashkina-Meese, M., Southard, R.J. 2002. Use of SSURGO to identify potentially K-fixing soils. 6th International Conference on Precision Agriculture. Minneapolis, MN. p.53.

Southard, R., Macalady, J., S. Ewing, Hartshorn, T., Johnson, M., Neumann, R., **McGahan, D.**, Tuli, A., and Brostrom, P. 1999. Spatial Distribution of Soil C, N, and Microbial Communities in a Mojave Desert Creosote Bush (*Larrea tridentata*) Ecosystem, California. American Association for the Advancement of Science: Pacific Division. San Francisco, CA. 18:1 June 19-23, 1999. p. 68.

Honors and Distinctions

2006 Fall-Spring Graduate Fellowship, University of California Davis

2005 Fall-Spring Graduate Fellowship, University of California Davis

2004 Fall-Spring Graduate Fellowship, University of California Davis

2003 Fall-Spring Graduate Fellowship, University of California Davis

2003 Soil Science Society of America recognition for excellence in presentation of a paper. SSSA Annual Meetings; Agronomy Abstracts. Denver, CO; November 2-6.

2002 Fall-Spring Graduate Fellowship, University of California Davis

2002 CRAM Grant, The David and Lucile Packard Foundation and Andrew W. Mellon Foundation
2001 Fall-Spring Graduate Fellowship, University of California Davis
2000 Fall-Spring Graduate Fellowship, University of California Davis
1999 Fall-Spring Graduate Fellowship, University of California Davis
1998 Fall-Spring Graduate Fellowship, University of California Davis
1997 Fall Graduate Fellowship, University of California Davis

Professional Affiliations

American Association for the Advancement of Sciences (AAAS), Since 1998.
Western Society of Soil Science, Since 1998.
Soil Science Society of America (SSSA), Since 1995.
American Geophysical Union, Since 2003.
Geological Society of America, Since 2003.
Naturally Occurring Asbestos (NOA) workgroup, Since 2005.

Academic Service

Student Representative, Executive Committee, Soil Science Graduate Group, University of California Davis 2000-2005
Treasurer, Student Soil Science Graduate Group, University of California Davis 1999-2000
Representative, Graduate Student Association, University of California Davis 1997-1998
President, Land, Air and Water Resource Club, University of California Davis 1996-1997
Chair, Soil and Water Conservation Society, University of California., Davis Chapter, 1996-1997
Land, Air and Water Resources Departmental Newsletter Editorial Board University of California Davis 2000

References

Randal J. Southard, Ph.D.
Professor of Soil Science and Genesis/Morphologist
Divisional Associate Dean for Environmental Sciences
Department of Land, Air and Water Resources, University of California Davis
One Shields Avenue
Davis, CA 95616
rjsouthard@ucdavis.edu 530.752.7041

Randy A. Dahlgren, Ph.D.
Professor of Soil Science and Pedologist/Soil Mineralogist
Director, Kearney Foundation of Soil Science
Director, Central Valley TMDL Research and Technical Support Program
Department of Land, Air and Water Resources, University of California Davis
One Shields Avenue

Davis, CA 95616
radahlgren@ucdavis.edu 530.752.2814

Robert J. Zasoski, Ph.D.
Professor of Soil Science and Soil Scientist/Nutritionist
Department of Land, Air and Water Resources, University of California Davis
One Shields Avenue
Davis, CA 95616
rjzasoski@ucdavis.edu 530.752.2210

Michael, J. Singer, Ph.D.
Professor of Soil Science and Soil Resource Scientist
Department of Land, Air and Water Resources, University of California Davis
One Shields Avenue
Davis, CA 95616
mjsinger@ucdavis.edu 530.752.7499

Craig Rasmussen, Ph.D.
Assistant Professor
Department of Soil Water and Environmental Sciences, University of Arizona
520 Shantz Blvd
Tucson, AZ 85721
crasmuss@cals.arizona.edu 520.621.7223