

Curriculum Vitae

Gerald K. Sims

*Department of Entomology Plant Pathology and Weed Science, New Mexico State University,
Las Cruces, NM 88003, gksims@nmsu.edu*

Education/Training

B.S., McNeese State University, 1978
M.S., Louisiana State University, 1981, *Associative dinitrogen fixation on grasses of Louisiana*
Ph.D., Purdue University, 1985, *Degradation of pyridine derivatives by soil microorganisms*
Mediator Training, Dept. Health and Human Services, Washington, DC, 1994
Congressional Briefing Training, Government Affairs Institute, Georgetown University, 2004
USDA-ARS Leader Training, Beltsville, MD, 2004
Research Position Evaluation System Training, Beltsville, 2004
Leadership Laboratory, Growth Dynamics, Albany, CA, 2005
Advancing Leaders Program, New Mexico State University, 2013-2014
Lead21, Leadership Course, 2014-2015

Positions Held

2012-present Professor and Department Head, Entomology Plant Pathology and Weed Science, New Mexico State University
2018-2019 Interim Dept. Head, Fish, Wildlife, Conservation Ecology, New Mexico State University
2003-2012 Supvy. Microbiologist (Research Leader), USDA-ARS, Urbana, IL
2007 (AUG-NOV) Acting National Program Leader, USDA-ARS, Beltsville, MD,
2007 (SEP-NOV) Interim Director, Overseas Biological Control Laboratories (France, Australia, Argentina, China), USDA-ARS
1992-2003 Microbiologist, USDA-ARS, Urbana, IL
1992--2014 Joint Faculty Appointments, Dept. Crop Sci., Dept. Natural Resources Environ. Sci., UIUC
1990-1992 Project Leader and Senior Research Chemist, Dow Chemical, Midland, MI
1990-1993 Adjunct faculty, Department of Agronomy, Ohio State University
1988, 1989 Visiting Scientist, Laboratory for Soil Microbiology, Pennsylvania State Univ.
1985-1990 Assistant Professor, Department of Agronomy, Ohio State University

Professional Service (selected)

Mediator (binding arbitration), ARS Coop Resolution program (1997-2003)
Member, site review team, NCSCRL, Morris, MN (5/21/1998)
Membership Committee (National), American Society of Agronomy, 1986-1991
CSRS-NCR-59 Tech. Committee (Soil Organic Matter), 1985-1990 (Secretary, 1989-1990)
Liaison, American Society of Agronomy/American Society for Microbiology, 1990-1993
Environmental Quality Research Award Committee, ASA, 1993-1995; 2006-2008
ASA/SSSA session chair (Divisions S-3, S-4, A-5, S-11), 1990, 1992, 1995, 1998.
Organizer/Session Chair SSSA Symposium (S-2, S-3, S-11), "Nature and bioavailability of bound residues", 1992.
Session Chair, C,N,P Transformations, Joint S-1/S-3 Symposium, SSSA Annual Meeting, 10/16/1995.

Organizer, SSSA Symposium (S-9, S-11), "Characterization of clays and inorganic contaminants in soils", 1995.

Soil Science Society of America Book Series Committee, 1992-1995.

Chair, Feasibility - Book on Transport and Fate of Xenobiotics in Soils, 1996-1997

Member, Feasibility -Book on Phys.& Chem. Interactions of Microbes,1997-1998

Co-Editor, Biodegradation of Xenobiotics in Soil: Factors Controlling, 2001

Mentor, American Society for Microbiology Minority Mentorship Program, 2005-2012.

Professional Awards Committee, Soc. for Environmental Toxicol. and Chemistry, 2007-2012

Member, Charles Clark Award Committee, SSSA, 2015-present

W-2082 Tech. Committee. Evaluating the Physical and Biological Availability of Pesticides and Agriculture and Food Editor, Encyclopedia of Earth, 2007-2012.

Co-moderator, Crop Protection and Quarantine Stakeholder Workshop, Miami (5/2008)

Co-editor, USDA National Program in Crop Protection and Quarantine Action Plan (2008)

Judge, Southwestern New Mexico Regional Science and Engineering Fair, 3/2/2013

Editorial Board, Journal of Bioremediation & Biodegradation, 2010-2012

Member, SSSA Research Award Committee, 2015-2016

Member, Francis E. Clark Distinguished Lectureship Committee, 2016-2017

Member, Soil Biology Graduate Student Scholarship Committee, 2016-2017

Chair, SSSA Research Award Committee, 2017-2018

Consulting

National Geographic Magazine (microbial ecology and genetic engineering)

Reilly Tar and Chemical Co; ENSR (feasibility for natural attenuation of pyridine-contaminated aquifer, USEPA Superfund site No. IN000807107)

Dow Chemical (bioavailability of pesticides)

Champaign City Council (groundwater hydrocarbon plume)

Field Museum of Natural History (Underground Adventure installation)

Mexico City Pollution Prevention and Control Office (phenolic contaminants)

International Ingredient Corp. (nutritional value of brewer's yeast to soil microbes)

Chicago Dept. of Health (outbreak of histoplasmosis)

DuPont de Nemours (rapid screening pesticide degradation)

Syngenta (herbicide carryover damage)

BASF (soil catalyzed hydrolysis of pesticide)

UK Central Science Laboratory, EBG, York (modeling bioavailability of organic contaminants)

Biotechnology Institute, Univ. Beijing, China (pyridine degradation)

Pict Sweet Foods (food contamination with unregistered pesticide)

University of Vermont (site review)

New Mexico Secretary of Education (bark beetle research)

Teaching

Ohio State University

Environmental Microbiology (Co-instructor, Microbiology Dept., 1988-1990)

Soil Microbiology (Agronomy/Microbiology Depts., 1985-1990)

Anaerobic Processes in Soils (Agronomy, 1985-1990)

Graduate Seminar (Agronomy Dept., 1985-1990)

Graduate Colloquium (Agronomy Dept., 1985-1990)

Undergraduate Colloquium (Agronomy Dept., 1985-1990).

University of Illinois

ACES Freshman Discovery (1996, 1998)

Graduate Group Studies (1996, 1998)

Graduate Seminar (F/S1995, F/S 1996)
Special Problems (1992-2012)
Thesis/Dissertation Research (1992-2014)
Senior Thesis in Microbiology (1996, 1997, 2000)
Special Problems in Microbiology (2009)
Guest lecturer
NRES 102 (Fundamentals of Env. Sci., 2009-2012)
NRES 375 (Soil Microbiology)
NRES 481 (Environmental Research Methods)
CPSC 426 (Weed Mgt in Agronomic Crops)
NRES 502 (Research Methods in NRES, 2011)
HORT 505 (Research Methods in Horticulture, 2012)
CPSC 593 (Adv. Studies in Crop Sciences (10/25-27/2012)

New Mexico State University

Introduction to IPM, EPWS 100 (2015)
Behavior of Pesticides in the Environment, EPWS 420/520 (2014, 2016, 2018, 2019)
Guest lecturer
Economic Entomology, EPWS 330 (2014, 2015, 2016)
Introduction to IPM, EPWS 100 (2016, 2017, 2018)

Undergraduate Advising:

OSU: Undergraduate advisor, Dept. Agronomy (1986-1990).
UIUC: Mentor for Jonathan Baldwin Turner program (1995,1996)
Hank Beachell Future Leader Scholarship (ASA, 1999)
McNair program for minority students (1994, 1996)
Summer Research Opportunities Program for minority students (1995, 1996, 2003)
Department of Microbiology Honors thesis program (1998, 1999, 2001)
Mentor, Howard Hughes Undergraduate Research Fellows program (1999)
Special Undergraduate Research Experience program (1999, 2000, 2003, 2004, 2005)
USDA 1890 National Scholar program (1998, 1999).

Graduate Advising:

Committee Chair/Co-Chair, Master of Science graduates: 20
Committee Chair/Co-Chair, PhD graduates: 10
Postdoctoral Fellows Mentored: 6

Research

- Environmental behavior of N-heterocycles
- EPA registration studies for herbicides
- Environmental process coupling as related to bioavailability
- Anaerobic transformations of herbicides
- Functional ecology of soil microorganisms

Research Grants, Contracts, other funds as PI or Co-PI (Career)

Competitive grants - \$6,918,112
USDA-ARS formula funds - \$17,761,090

University formula funds - \$14,000

Unrestricted donations for research - \$248,000

In kind donations (analytical equipment, radio-chemicals): ~ \$1,500,000

Scholarship Fundraising: ~\$180,000

Journal Articles and Proceedings (*authors in italics were students or post-doctoral fellows advised or co-advised by Sims*)

1. *Kanissery, R.G.*, B. Gairhe, C. McAvoy, and **G.K. Sims**. 2018. Herbicide bioavailability determinant processes in the soil. *J. Bioremediation and Biodegradation*. 10(1): 1-4 DOI: 10.4172/2155-6199.1000458.
2. *Kanissery, R.G.*, A. Welsh, A. Gomez, L. Connor and **G.K. Sims**. 2018. Identification of metolachlor mineralizing bacteria in aerobic and anaerobic soils using DNA-stable isotope probing. *Biodegradation*:29(2):117-128. doi: 10.1007/s10532-017-9817-6.
3. Sims, Jerry. 2017. "Placid Photography." *ArtAscent Art & Literature Journal*. 28:48-51.
4. *Kanissery, R.G.*, A. Welsh, and **G.K. Sims**. 2015. Effect of soil aeration and phosphate addition on the microbial bioavailability of ¹⁴C-glyphosate. *J. Environ. Quality*. 44:137-144. doi:10.2134/jeq2014.08.0331.
5. **Sims G.K.**, 2014. Bioavailability in biodegradation and function of herbicides. *J Bioremed Biodeg* 5: e144. doi:10.4172/2155-6199.1000e144
6. *Johnson, T.A.*, T.R. Ellsworth, R.J.M. Hudson, and **G.K. Sims**. 2013. Diffusion Limitation for Atrazine Biodegradation in Soil. *Advances in Microbiology*. 3(5): 412-420.
7. **Sims, G.K.** 2013. Current trends in bioremediation and biodegradation: stable isotope probing. *J. Bioremed. Biodeg.* 4(4):e134. <http://dx.doi.org/10.4172/2155-6199.1000e134>
8. **Sims, G.K.**, and *R.G. Kanissery*. 2012. Factors controlling herbicide transformation under anaerobic conditions. *Environmental Research Journal*. 6(4/5): p355-373.
9. *Kanissery, R.G.*, and **G.K. Sims**. 2011. Biostimulation for the enhanced degradation of herbicides in soil. *Applied and Environmental Soil Science*. Volume 2011 (2011), Article ID 843450, doi:10.1155/2011/843450.
10. *Gomez, A.M.*, Yannarell, A.C., **Sims, G.K.**, Cadavid-Resterpoa, G., and Herrera, C.X.M. 2011. Characterization of bacterial diversity at different depths in the Moravia Hill Landfill site at Medellín, Colombia. *Soil Biology and Biochemistry* 43:1275-1284.
11. *Johnson, T.A.* and **Sims, G.K.** 2010. Introduction of 2,4-dichlorophenoxyacetic acid into soil with solvents and resulting implications for bioavailability to microorganisms. *W. Journal of Microbiology and Biotechnology*. 27(5):1137-1143. DOI: 10.1007/s11274-010-0560-y.
12. *Shaffer, E.A.*, **Sims, G.K.**, *Cupples, A.M.*, Smyth, C., Chee-Sanford, J., and *Skinner, A.* 2010. Atrazine biodegradation in a Cisne soil exposed to a major spill. *International Journal of Soil, Sediment and Water*. 3(Issue 2, Article 5):1-26.
13. **Sims, G.K.**, S. Taylor-Lovell, G. Tarr, and S. Maskel. 2009. Role of Sorption and Degradation in the Herbicidal Function of Isoxaflutole. *Pest Management Science* 65(7):805-810.80.
14. *Shaffer, E.A.*, **G.K. Sims**, J.C. Chee-Sanford, *A.M. Cupples*, and C. Smyth. 2008. Atrazine biodegradation as related to the physiochemical properties of a Cisne soil from a major atrazine spill site. *Proc. Annual International Conf. Soils, Sediments, Water and Energy*. 13(28):380-402.
15. *Cupples, A.M.*, *E.A. Shaffer*, J.C. Chee-Sanford, and **G.K. Sims**. 2007. DNA buoyant density shifts during ¹⁵N DNA stable isotope probing. *Microbiological Res.* 162:328-334.
16. *Cupples, A.M.* and **G.K. Sims**. 2007. Identification of In Situ 2,4-Dichlorophenoxyacetic Acid-Degrading Soil Microorganisms using DNA-Stable Isotope Probing. *Soil Biology and Biochemistry* 39: 232-238.

17. **Sims, G.K.** 2008. Stable Isotope Probing to Investigate Microbial Function in Soil. Recent Research Developments in Soil Science. 2(2007): 64-85.
18. Chee-Sanford, J.C., Williams, M.M. II, Davis, A., **Sims, G.** 2006. Do microbes influence seed bank dynamics? Weed Science 54:575-587.
19. **Sims, G.K.** 2006. Nitrogen Starvation Promotes Biodegradation of N-Heterocyclic Compounds in Soil. Soil Biology & Biochemistry 38:2478-2480.
20. **Sims, G.K.**, E. A. Shaffer, A.M. Cupples, and J. C. Chee-Sanford. 2006. Examining the ecology of heterocyclic N utilization. 2006. Int. Symp. Microb. Ecol. 11:418.
21. Chee-Sanford, J.C., Sanford, R.A., Loffler, F.E., Thomas, S.H., **Sims, G.K.** 2006. Investigating anaerobic microbial processes in agricultural soils using *Anaeromyxobacter dehalogenans* as a cosmopolitan model. International Soc. for Microbial Ecology. 11:152.
22. **Sims, G.K.** 2006. Using the Berthelot Method for Nitrite and Nitrate Analysis. Soil Sci. Soc. Am. J. 70 (3): 1038.
23. Chee-Sanford, J.C., A. S. Davis, M. M. Williams II, L.M. Connor, T. J. Holman, and **G.K. Sims.** 2005. Microbial Interactions with Weed Seeds. North Central Weed Science Society Proceedings. 60:63.
24. Cupples, A. M., R. A. Sanford, and **G. K. Sims.** 2005. Dehalogenation of Bromoxynil (3,5-Dibromo-4-Hydroxybenzotrile) and Ioxynil (3,5-Diiodino-4-Hydroxybenzotrile) by *Desulfitobacterium chlororespirans*. Appl. Env. Micro. 71(7):3741-3746.
25. Marsh, K. L., **G. K. Sims,** and R. L. Mulvaney. 2005. Availability of urea to autotrophic ammonia-oxidizing bacteria as related to the fate of ¹⁴C- and ¹⁵N-labeled urea added to soil. Biol. Fert. Soil. 42:137-145.
26. J.C. Chee-Sanford , L.M. Connor, T.J. Holman, M.M. Williams II, **G.K. Sims.** 2004. Interactions between microorganisms and weed seeds: implications for the microbial ecology of seed banks. Int. Symp. Microb. Ecol. 10. p 1025.
27. Marsh, K. L., R. L. Mulvaney, and **G. K. Sims.** 2003. A technique to recover tracer as carboxyl-carbon and α -nitrogen from amino acids in soil hydrolysates. Journal of the Association of Analytical Communities International. 86(6):1106-1111.
28. **Sims, G. K.**, and M. M. Wander. 2002. Proteolytic activity under nitrogen or sulfur limitation. Appl. Soil Ecol. 568:1-5.
29. Crawford, J. J., **G. K. Sims,** F. W. Simmons, L. M. Wax, and D. L. Freedman. 2002. Dissipation of the herbicide (¹⁴C) Dimethenamid under anaerobic aquatic conditions in flooded soil microcosms. J. Agric. Food. Chem. 50(6): 1483-1491.
30. Hultgren, R. P., R.J. Hudson, and **G.K. Sims.** 2002. Effects of Soil pH and Soil Water Content on Prosulfuron Dissipation . J. Agric. Food Chem. 5 (11): 3236-3243.
31. Rupassara, S. I., R.A. Larson, **G.K. Sims,** and K.A. Marley. 2002 Degradation of atrazine by hornwort in aquatic systems. Bioremediation Journal 6(3): 217-224.
32. **Sims G.K., Danzer B.J. and R.F. Potera.** 2002. Role of Uptake in Bioavailability of Herbicides to Microorganisms. Proceedings 10th IUPAC Intl. Congress on the Chemistry of Crop Protection, Basel, Switzerland.
33. Larson, R. A., **G. Sims,** K. Marley, M. Montez-Ellis, T. Paul, and M. Crum. 2002. Nitrate management using terrestrial and aquatic plants. Proc. 12th Annual Conf., IL Groundwater Consortium. www.siu.edu/orca/igc/proceedings/02/.
34. Taylor-Lovell, S., **G. K. Sims,** & L. M. Wax. 2002. Effect of moisture, temperature, biological activity on degradation of isoxaflutole in soil. J. Ag. Food Chem. 50: 5626-5633.
35. Rupassara, S. I., R. A. Larson, & **G. K. Sims.** 2001. Biodegradation of atrazine in aquatic ecosystems. pp. 181-88, In Leeson, A., E. A. Foote, M. K. Banks, and V. S. Magar, eds. Phytoremediation, wetlands, and sediments, Proc. 6th Int. In-Situ & On-Site Bioremediation Symp. San Diego, CA. Batelle Press, Columbus, OH.
36. Rupassara, S. I., R. A. Larson, **G. K. Sims,** D.K. Pedersen, and R.A. Sanford. 2001. An atrazine degrading fungus isolated from reed canarygrass. Proc. Int. Symp. Microb. Ecol. 9. p 123.

37. Chee-Sanford, J.C., R.I.Aminov, S. Maxwell, I.J. Krapac, and **G.K. Sims**. 2001. The occurrence and diversity of antibiotic resistance genes in terrestrial ecosystems with and without impact from animal agriculture. *Int. Symp. Microb. Ecol.* 9. p 350.
38. *Xu, J., J. W. Stucki, J. Wu, J. Kostka, and G. K. Sims*. 2001. Fate of atrazine and alachlor in redox-treated ferruginous smectite. *Env. Tox. & Chem.* 20: 2717-2724.
39. Larson, R. A., M. Montez-Ellis, K. Marley, and **G. Sims**. 2001. Nitrate uptake by terrestrial and aquatic plants. Proc. 11th Annual Conf., IL Groundwater Consortium. Published on the Internet at www.siu.edu/orca/igc/proceedings/01/.
40. **Sims, G. K.**, *R. P. Hultgren, A.M. Cupples, & R. J. Hudson*. 2001. Role of ionization in bacterial uptake and soil sorption of agrochemicals. pp. 268-270 In Proc. 3rd Internat. Conf. on Groundwater Quality, Univ. of Sheffield, Sheffield, UK.
41. *Hultgren, R. P., E. Elverson, A.M. Cupples, R.J. Hudson, and G.K. Sims*. 2000. Bacterial uptake and soil sorption of ionizable agrochemicals. In Specialty Chemicals. Symp. Proc. Am. Chem. Soc. 40(1):192-194.
42. Marley, K. A., A. Curtis, R.A. Larson, *R.F. Mitchell*, and **G.K. Sims**. 2000. Abiotic and biotic pathways of atrazine loss in aquatic plant-containing microcosms. In Specialty Chemicals. Symp. Proc. Am. Chem. Soc. 40(1):161-163.
43. *Cupples, A. M., G. K. Sims, R. P. Hultgren, and S. E. Hart*. 2000. Effect of soil conditions on degradation of chloransulam-methyl. *J. Env. Qual.* 29:786-794.
44. *O'Loughlin, E. J, S. J. Traina, and G. K. Sims*. 2000. Effects of sorption on the biodegradation of 2-methylpyridine in aqueous suspensions of reference clay minerals. *Environ. Toxicol. and Chem.* 19:2168-2174.
45. *Tor, J., C. Xu, J. M. Stucki, M. Wander, G. K. Sims*. 2000. Trifluralin degradation under micro-biologically induced nitrate and Fe(III) reducing conditions. *Env. Sci. Tech.* 34:3148-3152.
46. *Taylor-Lovell, S., G. K. Sims, and L. M. Wax*. 2000. Effect of chemical instability of the herbicide isoxaflutole on soil adsorption. *Environ. Sci. Tech.* 34:3186-3190.
47. Needelman, B. A., M.M. Wander, G.A. Bollero, C.W. Boast, **G.K. Sims**, and D.G. Bullock. 1999. Interaction of tillage and soil texture: biologically active soil organic matter in Illinois. *Soil Sci. Soc. Am. J.* 63: 1326-1334.
48. *Hardaway, U. M.M. Wander, and G.K. Sims*. 1999. Fate of atrazine in soil aggregates. Soil Ecological Society Meetings, Proceedings. Chicago, IL. p.33.
49. **Sims, G. K.** and *A.M. Cupples*. 1999. Factors controlling degradation of pesticides in soil. *Pesticide Science* 55:598-601.
50. *O'Loughlin, E. J., G.K. Sims, and S.J. Traina*. 1999. Biodegradation of 2-methyl, 2-ethyl, and 2-hydroxypyridine by an *arthrobacter* sp. isolated from subsurface sediment. *Biodegradation* 10:93-104.
51. *Bichat, F., G.K. Sims, and R.L. Mulvaney*. 1999. Microbial utilization of heterocyclic nitrogen from atrazine. *Soil Sci. Soc. Am. J.* 63:100-110.
52. *Johnson, T. A., G.K. Sims, T.R. Ellsworth, and A.M. Balance*. 1998. Effects of moisture and sorption on biodegradation of p-hydroxybenzoic acid by *Arthrobacter* sp. *Microbiological Research* 153:349-353.
53. *Crawford, J. J., G.K. Sims, R.L. Mulvaney, and M. Radosevich*. 1998. Biodegradation of atrazine under denitrifying conditions. *Appl. Microbiol. Biotechnol.* 49:618-623.
54. *Rhine, E. D., G.K. Sims, R.L. Mulvaney, and E.J. Pratt*. 1998. Improving the Berthelot reaction for determining ammonium in soil extracts and water. *Soil Sci. Soc. Am. J.* 62:473-480.
55. *Bichat, F., G. K. Sims, and R. L. Mulvaney*. 1998. Utilization of heterocyclic nitrogen by soil microorganisms. *Int. Symp. Microb. Ecol.* 8. p.106.
56. Mulvaney, R. L., S.A. Khan, **G.K. Sims**, and W.B. Stevens. 1997. Use of nitrous oxide as a purge gas for automated nitrogen isotope analysis by the Rittenberg technique. *J. Auto. Chem.* 19:165-168.

57. Xu, C., Kocherginsky, NM, Stucki, JW, **Sims, GK**. 1996. Effect of soil oxidation state on the fate and behavior of agricultural chemicals. In: Research on Agricultural Chemicals in Illinois Groundwater: Status and Future Directions. VI. Proceedings of the Sixth Annual Conference. Illinois Groundwater Consortium, Carbondale, pp. 251-260.
58. Wander, M. M., R.B. Dudley, S.J. Traina, D. Kaufman, B.R. Stinner, and **G.K. Sims**. 1996. A CP-MAS ¹³C NMR investigation of acetate fate in organic and conventionally managed soils. Soil Sci. Soc. Am. J. 60:1110-1116.
59. *O'Loughlin, E.J., S.R. Kehrmeier, and G.K. Sims*. 1996. Isolation, characterization, and substrate utilization of a quinoline degrading bacterium. Int. Biodeterioration and Biodegradation. 1996:107-118.
60. Mann, D. K., T. M. Hurt, *E. Malkos, J. Sims, S. Twait and G. Wachter*. 1996. Onsite treatment of petroleum, oil, and lubricant (POL)-contaminated soils at Illinois Corps of Engineers lake sites. US Army Corps of Engineers Technical Report No. A862603 (71pages).
61. Wolt, J. D., *J.K. Smith, J.K. Sims, and D.O. Duebelbeis*. 1996. Products and kinetics of cloramsulam-methyl aerobic soil metabolism. J. Agric. Food Chem. 44:324-332.
62. *Greenan, N. S., R.L. Mulvaney, and G.K. Sims*. 1995. A microscale method for colorimetric determination of urea in soil extracts. Commun. Soil Sci. Plant Anal. 26:2519-2529.
63. **Sims, G. K.**, T.R. Ellsworth, and R.L. Mulvaney. 1995. Microscale determination of inorganic nitrogen in water and soil extracts. Commun. Soil Sci. Plant Anal. 26:303-316.
64. *Mervosh, T. L., E.W. Stoller, T.R. Ellsworth, and G.K. Sims*. 1995. Effects of starch encapsulation on clomazone and atrazine movement in soil and clomazone volatilization. Weed Science. 43:445-453.
65. *Mervosh, T. L., G.K. Sims, E.W. Stoller, and T.R. Ellsworth*. 1995. Clomazone sorption in soil: Incubation time, temperature, and soil moisture effects. J. Agric. Food Chem. 43:2295-2300.
66. *Mervosh, T. L., G.K. Sims, and E.W. Stoller*. 1995. Clomazone fate in soil as affected by microbial activity, temperature, and soil moisture. J. Agric. Food Chem. 43:537-543.
67. **Sims, G.K.**, and J.J. Hassett. 1995. Effects of soil moisture and microbial activity on bound pesticide residue. Illinois Water Resources Center 30:20-23.
68. Sims, G.K. 1994. Soil microbiology. Soil Health: The basis of current and future production. Proceedings Soil Conservation Society of America (Decatur, IL 6-7- Dec-1994). 1994:1-4.
69. Sims, G.K. and M.D. Cole. 1994. Aerobic biodegradation processes in soil. Proc. Bioremediation workshop, Soil Science Society of America, Seattle, WA, 11/13/1994. 4 pages.
70. Propes, K.L., F.W. Simmons, **G.K. Sims**, and C.W. Boast. 1993. Herbicide movement into and through earthworm induced macropores. North Central Weed Science Society Proceedings. 48:49-50.
71. *Mervosh, T.L., G.K. Sims and E.W. Stoller* 1993. Clomazone transformations in soil as affected by environmental factors. North Central Weed Science Society Proc. 48:51-52.
72. *Fennessy, M. S., G.K. Sims, and S.R. Kehrmeier*. 1992. Biodegradation of aromatic organic compounds under different redox regimes: a model system for teaching concepts in soil microbiology. J. Nat. Resour. Life Sci. Educ. 21(1):79-83.
73. **Sims, G. K.**, J.D. Wolt, and R.G. Lehmann. 1992. Bioavailability of sorbed pesticides and other xenobiotic molecules. In Proceedings of the International Symposium on Environmental Aspects of Pesticide Microbiology. Swedish Agricultural Univ., Sigtuna, Sweden. p. 159-164..
74. **Sims, G. K.** and *E.J. O'Loughlin*. 1992. Riboflavin production during growth of *Micrococcus luteus* on pyridine. Appl. Environmental Microbiology 58(10):3423-3425.
75. **Sims, G.K.**, and *E.J. O'Loughlin*. 1990. Degradation of Pyridines in the Environment. Civil Engineering (ASCE) CEWRA9. 60(1): 310-341.
76. **Sims, G. K.** 1989. Biological degradation of soils. Advances in Soil Science. 11:285-326.
77. **Sims, G. K.** and *E.J. O'Loughlin*. 1989. Degradation of pyridines in the environment. CRC Critical Reviews in Environmental Control. 19(4): 309-340.

78. Sims, G.K. 1989. Microorganisms in action: concepts and applications in microbial ecology. J. Environ. Qual. 18:248.
79. Sims, G. K. 1989. Peer review in the classroom. J. Agronomic Education 18:105-108.
80. Sims, G.K. 1987. Determination of organic substances in water. J. Environ. Qual. 16: 193-194.
81. **Sims, G. K.**, L.E. Sommers, and A. Konopka. 1986. Degradation of pyridine by *Micrococcus luteus* isolated from soil. Appl. Environmental Microbiology. 51:963-968.
82. **Sims, G. K.** and L.E. Sommers. 1986. Biodegradation of pyridine derivatives in soil suspensions. Environmental Toxicology and Chemistry. 5:503-509.
83. **Sims, G. K.** and L.E. Sommers. 1985. Degradation of pyridine derivatives in soil. J. Environmental Quality. 14:580-584.
84. Sims, G. K. and Sommers, L. E. 1985. Performance of *Azospirillum lipoferum* seed inoculant for associative nitrogen fixation in corn. Purdue Agric. Expt. Station Bulletin No. 475.
85. **Sims, G. K.** and Dunigan, E. P. 1984 Diurnal and seasonal variations in nitrogenase activity (C_2H_2 reduction) of rice roots. Soil Biology and Biochemistry. 16:15-18.
86. **Sims, G. K.** and Dunigan, E. P. 1981. Diurnal and seasonal variations in nitrogenase activity of excised roots of rice (*Oryza sativa*). Proceedings of the Louisiana Academy of Science. 52: 113.

Book Chapters

(authors in italics were students or post-doctoral fellows advised by Sims)

1. Gupta N., O'Loughlin E.J., **Sims G.K.** (2019) Microbial Degradation of Pyridine and Pyridine Derivatives. In: Arora P. (eds) Microbial Metabolism of Xenobiotic Compounds. Microorganisms for Sustainability, vol 10. Springer, Singapore
2. **Sims G.K.**, Kanissery R.G. (2019) Anaerobic Biodegradation of Pesticides. In: Arora P. (eds) Microbial Metabolism of Xenobiotic Compounds. Microorganisms for Sustainability, vol 10. Springer, Singapore
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103. *Chee-Sanford, J.C., M. Williams, and J. Sims.* 2004. Developing biological/ecological knowledge for enhancing weed management systems. USDA-ARS Workshop on Critical Issues in Biological Control, Feb. 1-3, Greenbelt, MD.
104. *Sims, G.K., R. Potera, P. Tranel, and D. Riechers.* 2003. Uptake of herbicides by soil bacteria. Society for Environmental Toxicology and Chemistry 24th Annual Meeting in North America, Austin, TX. Abstract Number PT-026, SETAC Annual Meeting Abstract Book, P. 194. 2003.
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106. *Chee Sanford, J.C., Connor, L.M., Holman, G.K. Sims* “Interactions between microorganisms and weed seeds: implications for the microbial ecology of seed banks”, 10th International Symposium on Microbial Ecology (ISME) Microbial Planet: Sub-Surface to Space Cancun, Mexico, August 22-27, 2004.
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114. *Sanford, R., J.C. Chee-Sanford, G.K. Sims.* 2006. “Investigating anaerobic microbial processes in agricultural soils using *Anaeromyxobacter dehalogenans* as a cosmopolitan model”, 11th International Symposium on Microbial Ecology, Vienna, Austria. August 20-25, 2006.
115. *Sims, G.K., Holt, J.F.* 2006. Anaerobic degradation of trifluralin. Society of Environmental Toxicology and Chemistry, Platform Presentation No. CUP-1117-835394.
116. *Sims, G.K.* 2007. Bioavailability of xenobiotics in unsaturated soils – implications for nucleic acid based stable isotope probing. In Agronomy Abstracts. International Meetings ASA-CSSA-

- SSSA, Nov 4-8, New Orleans, LA, American Society of Agronomy, Madison, WI, 2007. 188-3. (invited).
117. **Sims, G.K.** 2007. Potential for bioavailability to limit degradation of herbicides in unsaturated soils Midwest Chapter, Society of Environmental Toxicology and Chemistry, Argonne National Laboratory, March 14-16, 2007, Abstract No E1100-1040.
 118. **Sims, G.K.**, and *E.A. Shaffer*. 2007. Ecology of Atrazine Natural Attenuation in Soil from a Major Spill. Society of Environmental Toxicology and Chemistry Abstracts, SETAC Europe 17th Annual Meeting, Porto, Portugal, SETAC Europe Abstract Book, page 13 Abstract No. EC02-4.
 119. **Sims, G.K.** 2008. Microbial ecology of herbicide degradation – potential and limitations of nucleic acid based stable isotope probing. International Weed Science Congress, Vancouver, British Columbia, June 23–27, 2008, Abstract No. 574.
 120. *Shaffer, E., G. K. Sims, A. M. Cupples, C. Smyth, J. Chee-Sanford and A. Skinner*. 2010. Atrazine biodegradation in a Cisne soil exposed to a major spill. International Journal of Soil, Sediment and Water (conference proceeding).
 121. *Kanissery, R.G. and G.K. Sims* (2010) Degradation of [¹⁴C] Metolachlor in Drummer soil under different environmental conditions. Abstract published in Transactions of Illinois State Academy of Science; volume 103:48.
 122. *Kanissery, R.G. and G. Sims*. 2010. Degradation of the Herbicide Metolachlor in Soil under Different Environmental Conditions, Abstract No. 62. Proceedings of the 2010 North Central Weed Science Society. Volume 65:23.
 123. **Sims, G.K.** 2010. Matrix effects and measuring microbial response to xenobiotics in soil. Soil Science Society of America Annual Meeting, Long Beach, CA. Oct 31-Nov 3, 2010. Agronomy Abstracts 102:310-8. (Invited).
 124. *Kanissery, R. and G.K. Sims*. 2010. Degradation of the herbicide metolachlor in Drummer soil under different redox conditions. Soil Science Society of America Annual Meeting, Long Beach, CA. Oct 31-Nov 3, 2010. Agronomy Abstracts 102:104-2
 125. *Kanissery, R.G. and G.K. Sims* (2011) Fate of [¹⁴C] Metolachlor in different soil types under different environmental conditions. Abstract published in Transactions of Illinois State Academy of Science; volume 104:90.
 126. Jordan, N, A. Davis, S. Grandy, R. Koide, D. Mortensen, **G. Sims**, R. Smith, S. Snapp, K. Spokas and A. Yannarell, 2012. Precision Zonal Management Systems for Resilient Cereal Yields and Ecosystem Services Under Variable Climates. ASA, CSSA, and SSSA International Annual Meetings, Oct 21-24, 2012, Cincinnati, OH.
 127. *Kanissery, R.G. and G.K. Sims* (2012) Impact of anaerobic soil environment on the adsorption, desorption and degradation of [14C] Metolachlor. Abstract published in Transactions of Illinois State Academy of Science; volume 105:81.
 128. **Sims, G.K.** 2015. Degradation of dinitroaniline herbicides under iron reducing conditions. American Society for Microbiology Annual Abstracts, 115th General Meeting, May 30- June 2, 2015, New Orleans, LA, Poster No. 1294/Q.
 129. **Sims, GK.** 2015. Amino acids with high biosynthetic energy costs are conserved by soil communities. SSSA Annual Meeting, Minneapolis, MN. Nov. 15-18. Abstract 316-6 (poster #1303). Agron. Abstracts 102:104-2
 130. *Kanissery, RG, A Welsh, L Connor, GK Sims, and AC Yannarell*. 2015. Identification of metolachlor mineralizing bacteria in aerobic and anaerobic soils using DNA-stable isotope probing SSSA Annual Meeting, Minneapolis, MN. Nov. 15-18. Abstract 47-14 (oral presentation).
 131. **Sims, G.K.** 2017. Spatial heterogeneity among soil processes at sub-centimeter scale. SSSA Annual Meeting, Tampa, FL. Oct. 22-25. Abstract 41-13 (poster #1119).

132. **Sims, GK**, RG Kanissery, A Welsh, A Gomez, and L Connor. 2017. Identification of metolachlor-degrading bacteria in aerobic and anaerobic soils using DNA–stable isotope probing. American Society for Microbiology Rio Grande Branch Meeting, Las Cruces, NM, 4/8/2017.
133. **Sims, GK**. 2018. Nature and Bioavailability of Non-extractable soil residues of the herbicide cloransulam-methyl (invited talk). American Chemical Society, Boston, August 19-23.

Invited Presentations: 52 total

Electronic Media

1. **Sims, G.K.** 1988. Physiological responses of microorganisms exposed to agricultural chemicals In. Microbial Response to chemical contaminants in the environment. Audio cassette tape, ASM Board of Education and Training, Tape # ASM-254.
2. **Sims, G.K.** 1989. Microorganisms to decontaminate polluted soils. 1989 Science Expo, OARDC. Dec 8, 1989, Audio cassette tape, Ohio State University, Wooster, OH.
3. **Sims, G.K.** and M.A. Cole. 1994. Aerobic biodegradation processes in soil. Soil Science Society of America Bioremediation Workshop, SSSA Annual Meeting, Seattle, WA, Nov 13-17, 1994 (audio tape).
4. **Sims, J.** 2013. What is an Entomologist? YouTube. URL: <https://www.youtube.com/watch?v=HwFVTQu84uE>

Technology Transfer

Bacterial strains deposited with the American Type Culture Collection (www.atcc.org):

Arthrobacter crystallopoietes (ATCC 49443)-Degrades pyridine.

Micrococcus luteus (ATCC 49442)-Isolated from soil. Degrades pyridine.

Rhodococcus sp (ATCC 49988)-Isolated from soil. Degrades many heterocyclic compounds

Arthrobacter sp. (ATCC 49987)-Isolated from superfund site (aquifer) degrades pyridines, homocyclic compounds

Genbank Accessions (259 gene sequences total)

Chee-Sanford, J.C., L.M. Connor, T.J. Holman, and **G.K. Sims**. 2004. Public released genetic sequences of cloned bacterial phylogenetic genes associated with decayed seeds of velvetleaf (*Abutilon theophrasti*), Accessions #AY725246 through AY728065 and AY728074 through AY725263, National Center for Biotechnology Information, <http://www.ncbi.nlm.nih.gov>, BLAST 2.2.9.

Cupples, A.M., and **G.K. Sims**. 2006. Genes from 2,4-D degrader detected in soil by 13C-DNA stable isotope probing, Accessions # DQ398882–DQ398884, National Center for Biotechnology Information, <http://www.ncbi.nlm.nih.gov>, BLAST 2.2.9.

Maxwell, J.S., **G.K. Sims** and J.C. Chee-Sanford. 2006. Genes from tetracycline resistant isolates, Accessions #DQ337503-DQ337605 and #EF471216-471238, National Center for Biotechnology Information, <http://www.ncbi.nlm.nih.gov>, BLAST 2.2.9.

Gomez, A.M., Yannarell, A.C., Sims, G.K., Cadavid-Restrepo, G.E. and Moreno Herrera, C.X. 2011. Public released genetic sequences of cloned bacterial phylogenetic genes associated with Moravia Hill landfill site at Medellin, Colombia. Accessions #HM583862 through HM583867. <http://www.ncbi.nlm.nih.gov>, BLAST 2.2.9.

Kanissery, R.G. and G.K. Sims. 2015. Public released genetic sequences of cloned bacterial phylogenetic genes associated with degradation of the herbicide metolachlor (stable isotope probing) Accessions #KJ606962 through KJ606968. <http://www.ncbi.nlm.nih.gov>, BLAST 2.2.9.