

KANIKA SHARMA INGLETT

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GENERAL INTEREST

Climate change effects on carbon and nitrogen cycling, and greenhouse gas emissions in terrestrial and aquatic systems. Microbial ecology (structure and function) in wetlands; bioremediation and biodegradation of environmental pollutants

EDUCATION

Ph.D., Soil and Water Science with minor Microbiology, University of Florida, Gainesville, FL.
December 2002.

M.S., Agrochemical and pest management University of Delhi, New Delhi, India, 1997.

M.S., Biochemical Technology, University of Delhi, New Delhi, India. 1995.

B.S., Botany, Honors. Miranda House, University of Delhi, New Delhi, India. , 1994.

RESEARCH EXPERIENCE

Post Doctoral Research. Wetland Biogeochemistry Laboratory, Research Advisor: Dr. KR Reddy.
2003

Studying the effect of vegetation on decomposition of organic matter and greenhouse gas production and oxidation.

Aquatic food webs to study the trophic interactions between microbial functional groups in Florida Everglades.

Characterization of microbial communities associated with the early development of soils in a calcareous wetland soil using phospholipids fatty acid analysis.

Biogeochemical succession in early development of soils using nutrient and soil enzyme analysis.

Investigation of biogeochemical, physical and biological mechanisms that influence the phosphatase production in the periphyton mats.

Linking structure and functions in periphyton mats by using enzyme labeled fluorescent (ELF) substrate and fluorescence microscopy.

Doctoral Research. Soil Molecular Ecology Laboratory. Research Advisor: Dr. AV Ogram. 1998

Investigation of various electron donors and acceptors that support Cr(VI)- reducing bacteria in soils.

Enrichment, isolation and characterization of anaerobic Cr(VI) reducing bacteria using traditional anaerobic cultivation techniques, and molecular techniques as 16S rDNA analysis, cloning, restriction fragment length polymorphism (RFLP) screening and phylogenetic analysis.

Identification and characterization of a novel chromium reducing *Clostridium* sp using biochemical tests such as substrate utilization, phospholipid analysis, transmission and scanning electron microscopy (TEM and SEM).

Alternative pathways for Cr(VI) reduction by consortia of gram positive fermentative bacteria by analyzing the bacterial metabolic products with high pressure liquid chromatography (HPLC), and UV spectroscopy and fluorescence microscopy

Masters Research 1997.

- Project: *Study of Toxicity –Structure relationship of pesticides*. A review of Quantitative Structure Activity Relationship (QSAR) techniques. To study the toxicity-structure relationships.
- Report: *Cartap Hydrochloride vis-à-vis Phorate-Their acceptability by local farmers and future prospects*.
- Internship: (Chambal Fertilizers and Chemicals Ltd, Chandigarh, India)

Masters Research. Jawaharlal Nehru University, Delhi, India, Internship 1994-1995.

Report title. *Generation of antibodies against antigens of Mycobacterium tuberculosis using hybridoma technology*.

TEACHING

Soil and Water Science Department, University of Florida

- Instructor, *Bioremediation and Biodegradation of Contaminants* (SWS 6366, graduate level, co instructor Dr John Thomas) Spring, 2011 web-based* (odd years)
- Instructor, *Biogeochemistry of Wetlands* (SWS 6448, graduate level, co instructor Dr KR Reddy) Fall, 2010 web-based*(every year)
- Instructor, *Techniques in Biogeochemistry* (SOS 6932, graduate level, co instructor Dr KR Reddy) Spring 2010 (even years)
- Instructor, *Bioremediation and Biodegradation of Contaminants* (SOS 6366, graduate level, co instructor Dr John Thomas) 2008 (campus section)
- Co-Instructor, *Biogeochemistry of Wetlands* (SOS 6448, graduate level; Classroom and Distance education course) 2007
- Guest Lecture, *Functional Microbial Diversity in wetland soils* (SOS 6448, graduate level) 2006
- Guest Lectures, *Macromolecules and Energetics of Living Organisms* (SOS 6456, graduate level) 2006
- Guest Lectures, *Complex biomolecules* in Advanced Biogeochemistry (SOS 6456, graduate level) 2005
- Guest Lecture, *Microbial enzymes* in Soil Microbial Ecology (SOS 4303/5305, Undergraduate/ graduate level) 2004
- Guest Lecture, *Biogeochemistry of Carbon* in Biogeochemistry of Wetlands (SOS 6448, graduate level). 2004
- Guest lecture, *Terminal Electron acceptors* in Ecological Diversity of Soil Microorganisms (SOS 6323, graduate level), 2002
- Laboratory Instructor. *Introduction to Soils in the Environment Lab*. (SOS 3022L, undergraduate level), Soil and Water Science Department, University of Florida. 1999.

STUDENT MENTORING

Committee member:

- B. Govindarajan 2007 (M.S.; advisor Jyotsana Sharma, SNRE); C. Medvedoff (PhD.; advisor Patrick Inglett, SWS) X. Liao (PhD, advisor Patrick Inglett, SWS) Jing Hu (PhD.; advisor R. Reddy, SWS)

Students mentored:

- Kundavaran (undergraduate, Microbiology), R Z Ye, (PhD, advisor AL Wright, SWS); IC Torres (PhD, advisor KR. Reddy), HY Kim (PhD, co-advisor KR. Reddy), Hanna Lee (PhD : advisor Ted Schuur, Botany), R. Arazola (undergraduate, Microbiology), S. Patel (high school student for science fair project)

RESEARCH GRANTS

1. Everglades National Park (2008-2011) *Patterns of Soil Biogeochemistry in the Hole-In-the-Donut Region with Implications for Restoration Management* (Co-P.I. KS Inglett)
2. Florida Department of Energy (2007-2008) *Summary and Synthesis of the Available Literature on the Effects of Nutrients on Spring Organisms and Systems* (Co-P.I. KS Inglett).
3. St Johns River Water Management District (2006-2010) *Effects of Detrital Export from Different Land Uses on Water Quality and Food Webs of the St. Johns River*. (\$300,000) (P.I. KS Inglett).
4. St Johns River Water Management District (2006-2007) *Microbial enzyme activities in Wekiva springs*. (\$10,000) (P.I. KS Inglett)
5. South Florida Water Management District. (2005-2006) *Everglades Foodweb Isotopic Tracing Study* (\$109,450) (Co-P.I. KS Inglett)

CHAPTERS IN BOOKS

1. Ogram AV., SHARMA K. 2002. *Analysis of microbial community structures*, p 554-563. In: C.J. Hurst, R.L. Crawford, G. R. Knudsen, M. J. McInerney, and L. D. Stetzenbach (eds.) *Manual of Environmental Microbiology*, 2nd edition. American Society of Microbiology Press. Washington, D.C.
2. INGLETT KS., Inglett PW., Chanton JP. *Methanogenesis and Methane oxidation in wetlands*. *Methods in Biogeochemistry of Wetlands* (in-prep)

PUBLICATIONS

1. INGLETT KS, Inglett PW., Osborne TZ., Reddy KR. 2011 *Temperature sensitivity of greenhouse gas production in wetland soils of different vegetation* *Biogeochemistry*, doi:10.1007/s10533-011-9573-3
2. INGLETT KS., Bae, HS, Aldrich HC., Hatfield K., Ogram AV. 2010. *Clostridium chakrum* sp. nov., a novel strain isolated from a Cr(VI)-contaminated soil (*International Journal of Systematic and Evolutionary Microbiology*)
3. Torres IC., INGLETT, KS., Reddy KR. 2010. *Heterotrophic microbial activity in lake sediments: effects of organic electron donors*. *Biogeochemistry*. doi 10.1007/s10533-010-9494-6
4. Smith C., Serra L., Li Y., Inglett P, INGLETT K. 2010 *Restoration of Disturbed Lands: The Hole-in-the Donut restoration in the Everglades*. *CRC Reviews in Environmental Science*. 41: 723-739
5. Ogram, A., Chauhan A., INGLETT K., Jayachandran K., Newman S. 2010 *The role of microbial ecology in Everglades restoration*- *CRC Reviews in Environmental Science* 41:289-308
6. Ye R., Wright, AL., INGLETT K., Wang Y., Ogram AV., Reddy KR. 2009. *Land use effects on soil nutrient cycling and microbial community dynamics in the Everglades Agricultural Area, Florida* *Commun. Soil Sci. Plant Anal.* 40: 2725 – 2742.
7. SHARMA K., Inglett PW., Reddy KR., Ogram AV. 2005. *Microscopic examination of photoautotrophic and phosphatase-producing bacteria in phosphorus-limited Everglades periphyton mats*. *Limnology and Oceanography*, 50:2057-2062,

8. SHARMA K. *Microbial Cr(VI) reduction : Role of electron donors, acceptors, and mechanism with special emphasis on Clostridium sp.* 2002 Ph.D. Dissertation.

In review

9. INGLETT KS, Inglett PW., Reddy KR. *Changes in microbial community structure during early succession of soils in a calcareous wetland.* (Soil Science Society of America Journal)
10. INGLETT KS., Inglett PW., Reddy KR. *Biogeochemical changes during early development of calcareous subtropical wetland soils.* (Soil Science Society of America Journal)

In preparation

11. Medvedoff C., INGLETT KS., Inglett PW. *Interaction of vegetation and temperature on greenhouse gas production in subtropical wetland soils.* (to be submitted to Soil Biology and Biogeochemistry) April 2011
12. Lee H., Schuur EAG., INGLETT KS, Lavoie M, Vogel JG., Chanton J P. *The rate of permafrost carbon release and climate forcing under aerobic and anaerobic conditions* (to be submitted to JGR-Biogeosciences) June 2011
13. INGLETT KS., Hatfield K., Ogram AV. *Effect of electron donors and acceptors on microbial Cr(VI) reduction in soils.* (to be submitted to FEMS microbiology) May, 2011
14. Inglett PW, INGLETT KS., Hagerthey S., Newman S., Reddy KR. *A ¹³C pulse chase experiment to trace carbon flow in Everglades periphyton* (to be submitted to Limnology and Oceanography). June 2011
15. Osborne TZ, INGLETT KS, Reddy, KR. Fisher MM, Corstanje R *Effects of hydrologic management strategies on organic soil subsidence in Blue Cypress marsh, Florida.* (to be submitted to soils Biology and Biogeochemistry) June 2011
16. Medvedoff C., INGLETT KS, Inglett PW. *The Effects of Extreme Restoration on Aerobic and Anaerobic Respiration in Restored Subtropical Wetlands* (to be submitted to Restoration Ecology) July 2011
17. Liao X, Hogue B, INGLETT KS, Inglett PW. *Nutrient limitation in restored and natural reference wetlands of the Florida Everglades.* (to be submitted to Soil biology and Biogeochemistry) July 2011
18. Sickman, JO., INGLETT, KS. Osborne TZ, Henrickson J. *Effects of detrital export from different land uses on aquatic organic matter quality and food webs of the St. Johns River* (to be submitted to Journal of Environmental Quality) August 2011

TECHNICAL REPORTS

19. INGLETT KS., Osborne TZ, Sickman JO., 2011. *Effects of detrital export from different land uses on aquatic organic matter quality and food webs of the St. Johns River* Project Report submitted to St John`s Water management District.
20. Inglett PW., INGLETT KS., Reddy KR. 2008. *Biogeochemical Processes and Implications for nutrient cycling Report* in report titled ‘Summary and Synthesis of the Available Literature on the Effects of Nutrients on Spring Organisms and Systems’ submitted to FDEP Springs Initiative.
21. INGLETT KS, Inglett PW., Reddy KR. 2007. *Microbial enzyme activity in Wekiwa springs.* Project Report submitted to St John`s Water management District.

22. Reddy KR., Osborne TZ., INGLETT KS. 2006. *Influence of Water Levels on Subsidence of Upper Saint Johns River Basin Organic Soils*. Project Report submitted to St Johns Water management District.
23. INGLETT, KS., Inglett PW, Smith J, Ogram AV., Reddy KR. 2006 *Linkages between microbial community composition, function and re-vegetation in the Hole-in-the-Donut*. Report submitted to South Florida Natural Resources Center.
24. Inglett PW., INGLETT KS., Reddy KR. 2006 *Tracing carbon and Nitrogen through the Everglades Food web: An isotopic addition pilot study*. Report submitted to South Florida Water Management District.
25. SHARMA K., Inglett PW., Reddy KR., Ogram AV. 2004, *Biotic hydrolysis of organic phosphorus in effluents of stormwater treatment areas*. Report submitted to South Florida Water Management District.

ABSTRACTS and PRESENTATIONS

1. Medvedeff, CA, Inglett KS., Inglett PW. 2010. *Carbon cycling in a restored subtropical wetland*. Abstract submitted to Soil Science Society of America
 2. Liao XL., Hogue BA., Inglett KS., Inglett PW. 2010. *Nutrient limitation in restored wetlands and natural reference wetlands in the Hole-in-the-Donut in the Florida Everglades* Abstract submitted to Soil Science Society of America,
 3. Lee H, Schuur EAG, Vogel, JG, INGLETT, KS, Chanton, JP. 2009 *The climate forcing from permafrost carbon release under aerobic and anaerobic conditions* ESA 94th Annual Meeting Albuquerque, New Mexico.
 4. INGLETT, K. S., P. W. Inglett, K. R. Reddy. A. Ogram and M. R. Norland. 2007. *Changes in microbial community structure during early succession of soils in calcareous wetland soils*. Poster presentation. 10th International Symposium on Wetland Biogeochemistry: Frontiers in biogeochemistry. Annapolis MD.
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5. SHARMA, K., P. W. Inglett, K. R. Reddy. A. Ogram and M. R. Norland. 2005. *Biogeochemical succession in early development of calcareous wetland soils*. Oral presentation. Soil Science Society of America. Salt Lake City Utah.
 6. Castro, H. F., J. Smith, K. R. Park, K. SHARMA, M. W. Clark, K. R. Reddy, M. R. Norland, and A. Ogram. 2005. *Seasonal microbial community characterization in restoration of the Hole-in-the-Donut, Everglades National Park*. 104th American Society of Microbiology Meeting, Washington, DC
 7. Castro, H. F., K. R. Park, K. SHARMA, M. W. Clark, A. Ogram, K. R. Reddy, and M. R. Norland. 2004. *Linkage between microbial metabolic diversity and restoration age in the Hole-in-the-Donut, Everglades National Park*. National Conference on Ecosystem Restoration. Orlando, FL.
 8. SHARMA, K., Inglett, P.W., Reddy, K. R., Ogram, A.V. 2004. *Microscopic examination of distribution of autotrophic and phosphatase- producing bacteria in a periphyton from the phosphorus limited Everglades ecosystem*. Oral Presentation. American Society for Limnology and Oceanography Savannah, GA.
 9. SHARMA, K. A. Ogram, and K. R. Reddy. 2003. *Spatial Distribution and Characterization of the Microbial Communities Associated with Periphyton Mats in the Phosphorus-Limited Everglades Ecosystem*. 103rd American Society of Microbiology Meeting, Washington, DC.

10. SHARMA, K. and A. V. Ogram. 2003. *Microbial Cr(VI) reduction: Role of electron donors, acceptors, and mechanism with special emphasis on Clostridium sp.* Oral Presentation at American Chemical Society Meeting, New Orleans, LO.
11. Smith, K. S., J. F. Gerber, T. E. Hewlett, J.H. White, K. SHARMA and A. Ogram 2002. *Nutritional requirements of Pasteuria penetrans, an obligate parasite of root-knot nematodes and implications for large-scale production as a biological pesticide.* Society for Industrial Microbiology. Philadelphia, PA
12. SHARMA, K., Hatfield, K., and A.V. Ogram. 2002. *Humics mediated reduction of chromium (VI) by a Clostridium sp GCAF-1.* Poster presentation, 102nd American Society of Microbiology Meeting, Salt Lake City, UT.
13. SHARMA, K. 2002. *Alternative pathways for microbial reduction of chromium.* Oral presentation, Graduate Research Symposium, College of Agricultural and Life Sciences, Institute of Food and Agricultural Sciences, University of Florida, FL.
14. SHARMA, K., and A.V. Ogram. 2001. *Cr(VI) reduction by microorganisms isolated from chromium contaminated soil.* Oral presentation, 2nd Annual Graduate student Forum, Soil and Water Science Dept, Gainesville, FL.
15. SHARMA, K., Hatfield, K., and A.V. Ogram. 2001. *Isolation and characterization of Cr(VI) reducing bacteria.* 101st American Society of Microbiology Meeting, Orlando, FL.
16. SHARMA, K., and A.V. Ogram. 2000. *Quinone mediated reduction of Cr(VI).* Oral presentation, 1st Annual Graduate student Forum, Soil and Water Science Dept, Gainesville, FL.
17. SHARMA, K., Hatfield, K., and A.V. Ogram. 2000. *Quinone mediated reduction of Cr(VI).* 100th American Society of Microbiology Meeting, Los Angeles, CA.

SCIENTIFIC AFFILIATIONS

- American Chemical Society (ACS)
- American Society for Microbiology (ASM)
- American Society for Limnology and Oceanography (ASLO)

AWARDS and HONORS:

- Recipient of **Young Scientist Award** runners up for '*Microbial Cr(VI) reduction: Role of electron donors, acceptors, and mechanisms with special emphasis on Clostridium sp.*', American Chemical Society, Agrochemical Division. 2003
- Recipient of **Award of Excellence in Graduate studies** for PhD. Dissertation. Soil and Water Science Department, University of Florida, Gainesville, FL. December 2002
- Member of Honor Society of Agriculture *Gamma Sigma Delta* 2000
- Awarded second prize in the 'Professor B. M. Johri Memorial Declamation Contest' for paper entitled '*Conservation of genetic resources and role of biotechnology in India*'. University of Delhi, New Delhi, India. 1994
- Recipient of **Vice Chancellor's Rolling Shield** for environment for paper on '*Social Forestry and Nature Conservation*', University of Delhi, New Delhi, India. 1994

OTHER PROFESSIONAL DEVELOPMENT

Workshop - *Introductory Training in Geographic Information Systems (GIS) using Applications for Natural Resource Management*- Sea Grant Fl. 2010

- Served on Soil and Water Science Departmental Seminar Committee. 2002
- Graduate Research Forum Student Coordinator. *2nd Annual Graduate student Forum*, Soil and Water Science Department, Gainesville, FL. 2001
- Symposium in *International Biotechnology for Energy and Clean Environment*, University of Florida, FL 2000
- Attended workshop on *An introduction to Multiple Sequence Analysis through GCG's SeqLab Interface*, Interdisciplinary Center for Biotechnology Research, University of Florida, FL. 1999
- Student body President, Agro Chemicals and Pest Management Department, University of Delhi, Delhi, India.1996
- Workshop - *Energy and Environment*, Centre for Professional Development and Higher Education, University of Delhi, Delhi, India.1993
- Reviewer for scientific journals –Biogeochemistry, Wetlands, FEMS- Microbial Ecology, Soil Science Society of America Journal, Biogeochemistry, Limnology and Oceanography.