

**CURRICULUM VITAE**  
**Deborah L. Allan**  
**January, 2005**

Department: Soil, Water, and Climate

Rank: Professor since July 1999

Education:

B.A.	1973	Grinnell College, Iowa	Anthropology
M.A.	1976	University of Pennsylvania	Anthropology
M.S.	1983	California Polytechnic State Univ., San Luis Obispo	Agriculture
		Thesis Title:	Clay Mineralogy and Amorphous Content of a Volcanic Ash Soil from the Lassen National Forest
Ph.D.	1987	University of California, Riverside	Soil Science
		Thesis Title:	Proton and Copper Adsorption to Maize and Soybean Root Cell Walls

Professional Experience:

1979-1982 Research Assistant, Soil Science Dept., Cal Poly State Univ.  
1981 Laboratory Instructor, Soil Science Dept., Cal Poly State Univ.  
1980-1981 Biological Technician (Soils), U.S. Forest Service, Shasta-Trinity and Lassen National Forests, (Summers).  
1982 Soil Scientist, FIR Research Project, Oregon State University.  
1983-1987 Research Assistant, Soil and Environmental Sciences Department, University of California, Riverside.  
1987-1993 Assistant Professor, Soil Science Department, University of Minnesota  
1993-1999 Associate Professor, Department of Soil, Water, and Climate, University of Minnesota  
1999- Professor, Department of Soil, Water, and Climate, University of Minnesota  
2001-2005 Director of Graduate Studies, Soil Science Graduate Program

Professional Organizations and Honorary Societies:

American Society of Agronomy  
American Society of Plant Biologists  
Gamma Sigma Delta  
Institute for Alternative Agriculture  
Phi Beta Kappa  
Sigma Xi  
Soil Science Society of America  
Soil and Water Conservation Society

Awards Received:

Marshall Scholarship Finalist 1972  
Graduate Opportunity Fellowship 1983-84  
Graduate Council Fellowship 1984-86  
Outstanding Teaching Assistant, Soil Science Dept. 1985-86  
Bush Foundation Project for Teaching Excellence 1991-92  
Fellow of the American Society of Agronomy, 2004  
Fellow of the Soil Science Society, 2004

Job Description:

Develop and teach soil biology and fertility (Soils 3612/5611), teach Supervised Teaching Experience (8005), supervise student teaching requirement (8550), and participate in seminars and colloquia as needed.

Develop a graduate education and research program in the areas of plant nutrient efficiency and soil quality.

**RESEARCH ACTIVITIES**

My research program is focused on the plant root-soil interface. My objective is to determine how roots and rhizosphere processes can be managed to improve efficiency of nutrient use, minimize environmental pollution, and maximize soil quality. My present work includes the study of root-mediated mechanisms of enhanced nutrient acquisition and the effects of alternative cropping systems on soil quality and nutrient availability.

Graduate Research:

Bruce Cook, M.S. Completed Fall 1990  
Cameron Gourley, Ph.D. with Michael Russelle. Completed Fall 1991  
Diego Gangotena, M.S. with Carl Rosen. Completed Fall 1995  
Yanping Liu, Ph.D. with Paul Bloom. Completed Fall 1995  
Jane Johnson, Ph.D. (Plant Biology), with Carroll Vance. Completed Fall 1995  
Calvin Trostle, Ph.D. with Paul Bloom. Completed Spring 1997  
Larry Oldham, Ph.D. with George Rehm. Completed Fall 1997  
Farhana Alamgir Rahman, M.S. with Carl Rosen. Completed Fall 2001  
Maya Kuratomi, M.S. Completed Summer, 2003  
Katie Clayton, M.S. 2002-2004  
Keith Piotrowski, M.S. 2002-  
Kelly Zinn, Ph.D. Plant Biology, with Carroll Vance. 2002-  
Marilyn Johnson, M.S. 2004-  
Silvano Abreu, Ph.D. 2004-

Postgraduate Research:

Raphi Mandelbaum, supervised with Larry Wackett (Biochemistry), 1991-1993.  
Jane Johnson, supervised with Carroll Vance (Agronomy), 1995-1996.  
Diane Knight, 1995-1996.  
Jay Dorsey, 1994-97.  
Yanping Liu, 1996-97.  
Glena Gilbert, supervised with Carroll Vance, 1996-98.  
Christopher Iremonger, supervised with Dave Mulla, 1997-2001.

Aiguo Li, supervised with Carroll Vance, 1999-2000.  
Claudia Uhde-Stone, supervised with Carroll Vance, 2000-2004  
Jan Podkowinski, supervised with Carroll Vance, 2005-

Graduate Advising and Examining Committee Assignments:

Full Member of the Graduate Faculties in Soil Science, Plant Biological Sciences, and Conservation Biology

Current Committee assignments:

Elena Beyhaut, M.S. Soil Science  
Divya Chandran, Ph.D. Plant Biology  
Mark Norris, Ph.D., Forest Resources  
Sara Beth Scadlock, M.S. Soil Science

Other Activities:

Obtained faculty development grant in the amount of \$4,805 to attend the 2<sup>nd</sup> International Symposium on Phosphorus in the Water-Soil-Plant Continuum held in Perth, WA, and visited other scholars and research sites (CSIRO, Canberra and Dept of Primary Industries, Agriculture Victoria, Gippsland) during a one-month visit in September, 2003.

Attended “Molecular Biology Techniques Workshop” (June 15-26, 1998), College of Veterinary Medicine, U of M

## **RESEARCH SUPPORT**

Agricultural Experiment Station:

Project 84, C. J. Rosen, D.L. Allan and G. Malzer, co-PIs. Improving Plant Nutrient Use Efficiency.

Grants Approved:

Allan, D.L. Effects of cell wall adsorption and root exudation on rhizosphere chemistry. Graduate School, University of Minnesota. 1987-88. \$8,500. Extension approved 1988-89. \$11,060.  
Bloom, P.R. and D.L. Allan. Development of methodologies for mass screening of rice breeding lines for tolerance to low soil Zn and P. CSRS, IRRI. 1988-90. \$50,589.  
Allan, D.L. and E.A. Nater. RHIZOSOL: An interactive model describing processes occurring at the root-soil interface. Project Minnemac. 1988-90. Two Mac-SE's, one Imagewriter and software.  
Allan, D.L. and M.P. Russelle. Leaching losses of symbiotically-fixed and fertilizer N in legume-nonlegume crop rotations. Agricultural Research Branch, Tennessee Valley Authority. 1988-91. \$33,000.  
Graham, P.H., D.L. Allan, C.J. Rosen, and D. Davis. Improving productivity of Phaseolus beans under conditions of low-input agriculture. Bean Cowpea CRSP. 1989-92. \$380,740. Renewal funded for 1992-97. \$748,750.

- Olund, E.N. and D.L. Allan. Rhizosphere products of cover crop species. Undergraduate Research Opportunities Program, U of M. 1988-89. \$1,000.
- Allan, D.L. OIE and COA office Faculty Grant Award for travel to Netherlands. 1989. \$1,000.
- Allan, D.L. Soil carbon quality and N mineralization in old fields at Cedar Creek. Graduate School, U of M. 1989-90. \$5,652.
- Allan, D.L. and B.D. Cook. Characterization of soil carbon and its effect on nitrogen mineralization in an old field successional sequence. Cedar Creek Natural History Area Advisory Committee, U of M. 1989-90. \$11,200.
- Putnam, D. H. and D. L. Allan. Biological basis for overyielding in two intercrop systems. Graduate School, U of M. 1989-90. \$8,800.
- Allan, D.L. Corn hybrid response to potassium deficiency. Potash and Phosphate Institute. 1990. \$700.
- Buzicky, G., D. Allan, and R. Becker. Review and evaluation of degradation and bioremediation of elevated levels of pesticides at spill sites. Legislative Commission on Minnesota Resources. 1991-93. \$300,000.
- Rehm, G., D. Hicks and D. Allan. Matching plant populations and fertilizer management for profitable corn production. Potash and Phosphate Institute, Potash Corp. of Saskatchewan, DEKALB Genetics and Asgrow Seed. 1991-93. \$39,000.
- Bloom, P.R. and D.L. Allan. Organic phosphorus mineralization and bioavailability in soils. Agricultural Research Branch, Tennessee Valley Authority. 1992-94. \$36,000.
- Allan, D.L. and C.J. Rosen. OIE Faculty Grant Award for travel to Ecuador. 1991. \$1,300.
- Allan, D.L. and P. Thao. CBS High School Summer Science Research Program. 1991. \$600.
- Rehm, G., D. Allan and S. Evans. Matching precision placement of potash fertilizer to root growth dynamics in a ridge-till planting system. Pioneer Hi-Bred and MN Plant Food and Chemicals Assoc. 1992-94. \$16,000.
- Charvat, I., and D. Allan. Comparison of inoculations with VA mycorrhizae and plant growth at different P concentrations in sand and sand-alumina culture. MAES Seed Grant. 1992-1993. \$10,000.
- Allan, D. L. and C. P. Vance. Phosphorus-stress induced changes in carbon metabolism and assimilation in lupin. NRI-CGP, USDA. 1993-95. \$110,000.
- Gardner, J. et al. Development and application of soil quality indicators. Northwest Area Foundation. 1993-95. Minnesota budget: \$100,000. (Allan, Huggins, Alms)
- Rehm, G.W. and D.L. Allan. The impact of starter fertilizers on root activity and production of corn hybrids. Potash and Phosphate Institute. 1994-95. \$17,000.
- Boody, G., and D. L. Allan. Biological, financial and social monitoring to develop highly sustainable farming systems. Minnesota Institute for Sustainable Agriculture, SARE/ACE, and LCMR. 1994-96. \$315,000.
- Boody, G. et al. Packaging, testing and disseminating a set of indicators for ecological, financial, and social monitoring on farms. NC Region SARE/ACE. 1996-98. \$88,000.
- Allan, D.L., C. Sheaffer and J. Dorsey. Rotational grazing improves pastures. MN Dept. of Agriculture. 1995-97. \$20,000.
- Allan, D.L., and C.P. Vance. Phosphorus stress induced changes in metabolism and development in lupin. NRI-CGP, USDA. 1995-98. \$105,000.
- Lewandowski, A., D. Huggins, and D. Allan. Guide to integrated soil management. Minnesota Inst. for Sustainable Agriculture. 1996. \$25,000.

- Allan, D.L. Crop rotation and manure effects on nitrogen cycling efficiency. Graduate School, University of Minnesota Grant-in-Aid. 1996-97. \$14,980.
- Allan, D.L. Biological aspects of soil quality at NRI sites. USDA-ARS National Soil Tilth Laboratory Cooperative Agreement. 1996-97. \$26,500.
- Allan, D.L. and H.H. Cheng. Soil management guidebook project. USDA-NRCS. Soil Quality Institute. 1997-99. \$40,000.
- Murray, H., and D. Allan. Sustainable farming systems. Legislative Commission on Minnesota Resources. 1997-2001. \$560,000 (1997-99) and \$350,000 (1999-2001).
- Allan, D.L. and C.P. Vance. Phosphorus deficiency induced changes in root gene expression of white lupin. NRI-CGP, USDA. 1998-02. \$163,200.
- Samac, D.A., D.L. Allan and C.P. Vance. Increased aluminum tolerance in alfalfa by enhanced expression of PEPC and MDH. North Central Biotechnology Initiative. 1998-01. \$149,000.
- Allan, D.L. China Center Faculty Grant Award for travel to China. 2000. \$600.
- Rosen, C., D. Allan, J. MacKenzie, and D. Brown. Arsenic availability from treated lumber used for garden beds. Univ. of Minnesota Gardening Calendar Special Funds Program. 1999-2000. \$29,000.
- Allan, D.L. and E. Dyck. Assessing soil quality changes in alternative and conventional cropping systems. North Central SARE Research/Education. 2000-02. \$93,300.
- Allan, D.L. and M. Schmitt. Environmental impacts and economic comparison of alternative dairy systems. USDA EQIP Education Assistance. 2001-2004. \$71,000 (for Part A. Soils) from a total award of \$185,000 to The Minnesota Project.
- Rosen, C., D. Allan, J. King, J. Moncrief and M. Sadowsky. Purchase of a CE Instruments Flash EA 1112 Combustion CNS Analyzer. Graduate School Grant-in-Aid and COAFES 2003. \$40,000.
- Allan, D.L. and C.P. Vance. Molecular mechanisms which mediate white lupin's adaptation to P deficiency. NRI-CGP, USDA. 2002-2004. \$167,500.
- Sheaffer, C., P. Nickel, D. Allan, and D. Wyse. Integrated weed and soil management options for organic cropping systems in Minnesota. IREE-Pest Management – Organic Transitions, USDA. 2002-2006. \$424,091.
- Allan, D. Faculty development grant for travel to Canberra, Melbourne, and Perth, Australia to attend 2<sup>nd</sup> International Symposium on Phosphorus and visit research centers in September, 2003. \$4,805.
- Allan, D., J. Bell, J. King, and J. Strock. Carbon and nitrogen dynamics: Storage and losses in Upper Midwest cropping systems. NRI-CGP Managed Ecosystems, USDA. 2003-2007. \$395,000.
- Allan, D.L. and C.P. Vance. White lupin response to phosphate deficiency: Analysis of gene function through RNAi. USDA-NRI Competitive Grants, 2005-2008. \$288,000.
- Volk, G. and D. Sternes with cooperators at 12 locations—C Rosen and D Allan in MN Increased profits for sustainably produced garlic. Northeast Regional SARE, 2005-2008. \$65,000.
- Sheaffer, Wyse, Harbur, Nickel, Potter, Chen, Allan, Kandel and Stahl. Tools for managing pest and environmental risks to organic crops in the Upper Midwest. USDA Risk Management Agency, \$627,926. 2005-2008 (\$24,000 to D. Allan)

## PUBLICATIONS

### Refereed Journals/Proceedings

1. Allan, D.L. and W.M. Jarrell. 1989. Proton and copper adsorption to maize and soybean root cell walls. *Plant Physiol.* 89:823-832.
2. Rosen, C.J., D.L. Allan and J.J. Luby. 1990. Nitrogen source and solution pH influence growth and nutrition of two Vaccinium clones. *J. Am. Soc. Hort. Sci.* 115:83-89.
3. Allan, D.L., J.R. Shann, and P.M. Bertsch. 1990. Role of root cell walls in iron deficiency of soybean (Glycine max) and aluminum toxicity of wheat (Triticum aestivum). M.L. Van Beusichem (ed.). *Plant Nutrition - Physiology and Applications*, p. 345-349. Kluwer Academic Publishers, Dordrecht.
4. Putnam, D. H. and D.L. Allan. 1992. Mechanisms for overyielding in a sunflower/mustard intercrop. *Agron. J.* 84:188-195.
5. Cook, B.D. and D.L. Allan. 1992. Dissolved organic carbon in old field soils: Total amounts as a measure of available microbial resource. *Soil Biol. Biochem.* 24:585-594.
6. Cook, B.D. and D.L. Allan. 1992. Dissolved organic carbon in old field soils: Compositional changes during the biodegradation of soil organic matter. *Soil Biol. Biochem.* 24:595-600.
7. Gourley, C.J.P., D.L. Allan, M.P. Russelle, and P.R. Bloom. 1993. Evaluation and improvements of a sand-alumina culture technique to screen plants for low phosphorus tolerance. *Soil Sci. Soc. Am. J.* 57:103-110.
8. Gourley, C.J.P., D.L. Allan, and M.P. Russelle. 1993. Differences in response to available phosphorus among white clover cultivars. *Agron. J.* 85:296-301.
9. Mandelbaum, R. T., L. P. Wackett and D. L. Allan. 1993. Mineralization of the s-triazine ring of atrazine by stable bacterial mixed cultures. *Appl. Environ. Microbiol.* 59:1695-1701.
10. Mandelbaum, R. T., L. P. Wackett and D. L. Allan. 1993. Rapid hydrolysis of atrazine to hydroxyatrazine by soil bacteria. *Environ. Sci. Technol.* 27:1943-1946.
11. Gourley, C. J. P., D. L. Allan, and M. P. Russelle. 1994. Plant nutrient efficiency: Comparison of definitions and a suggested improvement. *Plant Soil* 158:29-37.
12. Allan, D.L., B. D. Cook, and C.J. Rosen. 1994. Organic acid content of cranberry roots and shoots grown with different nitrogen sources and solution pH. *HortScience* 29:313-315.
13. Johnson, J. M. F., D. L. Allan, and C. P. Vance. 1994. P-stress induced proteoid root morphology alters root metabolism in Lupinus albus. *Plant Physiol.* 104:657-665.
14. Russelle, M.P., D.L. Allan, and C.J.P. Gourley. 1994. Direct assessment of symbiotically fixed nitrogen in the rhizosphere of alfalfa. *Plant Soil* 159:233-243.
15. Wackett, L.P., and D.L. Allan. 1995. Bioremediation in the rhizosphere. *Environ. Sci. Technol.* 29:551 (Commentary on current research.)
16. Mandelbaum, R.T., L.P. Wackett and D.L. Allan. 1995. Isolation and characterization of a Pseudomonas sp. that mineralizes the s-triazine herbicide atrazine. *Appl. Environ. Microbiol.* 61:1435-1457.
17. Johnson, J.F., D.L. Allan, C.P. Vance and G. Weiblen. 1996. Root carbon dioxide fixation by phosphorus-deficient Lupinus albus. Contribution to organic acid exudation by proteoid roots. *Plant Physiol.* 112:19-30.
18. Johnson, J.F., C.P. Vance and D.L. Allan. 1996. Phosphorus deficiency in Lupinus albus. Altered lateral root development and enhanced expression of phosphoenolpyruvate

- carboxylase. *Plant Physiol.* 112:31-41.
20. Ayisi, K.K., D.H. Putnam, C.P. Vance, M.P. Russelle and D.L. Allan. 1997. Strip intercropping and nitrogen effects on seed, oil, and protein yields of canola and soybean. *Agron J.* 89:23-29.
  21. Hansmeyer, T.L., D.R. Linden, D.L. Allan and D.R. Huggins. 1997. Determining carbon dynamics under no-till, ridge-till, chisel, and moldboard tillage systems within a corn and soybean cropping sequence. *In* R. Lal, J.M. Kimble, R.F. Follett, B.A. Stewart (eds) *Management of Carbon Sequestration in Soil*. CRC Press LLC, Boca Raton, FL.
  22. Huggins, D.R., D.L. Allan, J.C. Gardner, D.L. Karlen, D.F. Bezdicek, C.J. Rosen, M.J. Alms, M. Flock, B.S. Miller, and M.L. Staben. 1997. Enhancing carbon sequestration in CRP-managed land. *In* R. Lal, J.M. Kimble, R.F. Follett, B.A. Stewart (eds) *Management of Carbon Sequestration in Soil*. CRC Press LLC, Boca Raton, FL.
  23. Gilbert, G.A., D.L. Allan and C.P. Vance. 1997. Phosphorus deficiency in white lupin alters root development and metabolism. *In* H.E. Flores, J.P. Lynch, D. Eissenstat (eds.) *Radical Biology: Advances and Perspectives on the Function of Plant Roots*. American Society of Plant Physiologists, Rockville, MD.
  24. Gilbert, G.A., C.P. Vance and D.L. Allan. 1998. Regulation of white lupin root metabolism by phosphorus availability. *In* J. Lynch and J. Deikman (eds). *Phosphorus in Plant Biology*. American Society of Plant Physiologists, Rockville, MD. p. 157-167.
  25. Allan, D.L., G.W. Rehm, and J.L. Oldham. 1999. Root system interactions with potassium management in corn. *In* Oosterhuis, D. and G. Berkowitz (eds). *Frontiers in Potassium Nutrition: New Perspectives on the Effects of Potassium in Crop Plant Physiology*. ASA Symposium Proceedings published by Potash and Phosphate Institute. p. 111-116.
  26. Karlen, D.L., M.J. Rosek, J.C. Gardner, D.L. Allan, M.J. Alms, D.F. Bezdicek, M. Flock, D.R. Huggins, B.S. Miller, and M.L. Staben. 1999. Conservation Reserve Program effects on soil quality indicators. *J Soil Water Cons* 54:439-444. (recipient of the SWCS Best Journal of Soil and Water Conservation Feature Article Award).
  27. Gilbert, G.A., J.D. Knight, C.P. Vance and D.L. Allan. 1999. Acid phosphatase activity in phosphorus-deficient white lupin roots. *Plant Cell Env.* 22:801-810.
  28. Vance, C.P., P.H. Graham, and D.L. Allan. 2000. Biological nitrogen fixation: Phosphorus a critical future need? *In* F. Pederosa, M. Hungariam, W. Yates and W. Newton (eds.) *Nitrogen Fixation from Molecules to Crop Productivity*.
  29. Gilbert, G.A., J.D. Knight, C. P. Vance and D.L. Allan. 2000. Proteoid root development of phosphorus deficient lupin is mimicked by auxin and phosphonate. *Ann. Bot.* 85: 921-928.
  30. Brejda, J.J., T.B. Moorman, J.L. Smith, D.L. Karlen, D.L. Allan, and T.H. Dao. 2000. Distribution and variability of surface soil properties at a regional scale. *Soil Sci. Soc. Am. J.* 64:974-982.
  31. Brejda, J.J., D.L. Karlen, J.L. Smith and D.L. Allan. 2000. Identification of regional soil quality factors and indicators: II. Northern Mississippi loess hills and Palouse prairie. *Soil Sci. Soc. Am. J.* 64:2125-2135.
  32. Miller, S.S., J. Liu, D.L. Allan, C. Menzhuber, M. Federova, and C.P. Vance. 2001. Molecular control of acid phosphatase secretion into the rhizosphere of proteoid roots. *Plant Physiol* 127:594-606.
  33. Trostle, C.L., P.R. Bloom, and D.L. Allan. 2001. HEDTA-nitrilotriacetic acid chelator-

- buffered nutrient solution for zinc deficiency evaluation in rice. *Soil Sci. Soc. Am. J.* 65:385-390.
34. Brejda, J.J. M.J. Mausbach, J.J. Goebel, D.L. Allan, T.H. Dao, D.L. Karlen, T.B. Moorman, and J.L. Smith. 2001. Estimating surface soil organic carbon content at a regional scale using the National Resource Inventory. *Soil Sci. Soc. Am. J.* 65:842-849.
  35. Liu, J., C. Uhde-Stone, A. Li, C. Vance, and D. Allan. 2001. A phosphate transporter with enhanced expression in proteoid roots of white lupin (*Lupinus albus* L.) *Plant Soil* 237:257-266
  36. Tesfaye, M., S.J. Temple, D.L. Allan, C.P. Vance, and D.A. Samac. 2001. Over-expression of malate dehydrogenase in transgenic alfalfa enhances organic acid synthesis and confers tolerance to aluminum. *Plant Physiol* 127:1836-1844.
  37. Schulze, J., M. Tesfaye, R.H.M.G. Litjens, B. Bucciarelli, G. Trepp, S. Miller, D. Samac, D. Allan, and C.P. Vance. 2002. Malate plays a central role in plant nutrition. *Plant Soil* 247: 133-139.
  38. Uhde-Stone, C., G. Gilbert, J. M-F Johnson, R. Litjens, K.E. Zinn, S.J. Temple, C.P. Vance, and D.L. Allan. 2003. Adaptation of white lupin to phosphorus deficiency involves enhanced expression of genes related to organic acid metabolism. *Plant Soil* 248:99-116.
  39. Uhde-Stone, C., K.E. Zinn, M. Ramirez-Yanez, M, Vance, C.P., C. Uhde-Stone, and D.L. Allan. 2003. Nylon filter arrays reveal differential gene expression in proteoid roots of white lupin in response to P deficiency. *Plant Physiol.* 131:1064-1079.
  40. Vance, C.P., C. Uhde-Stone, and D.L. Allan. 2003. Phosphorus acquisition and use: Critical adaptations by plants for securing a nonrenewable resource. (Tansley review). *New Phytologist* 157:423-447.
  41. Tesfaye, M., N.S. Dufault, M.R. Dornbusch, D.L. Allam, C.P. Vance, and D.A. Samac. 2003. Influence of enhanced malate dehydrogenase expression by alfalfa on diversity of rhizobacteria and soil nutrient availability. *Soil Biol. and Biochem.* 35: 1103-1113.
  42. Rahman, F.A., D. L. Allan, C. J. Rosen, and M. J. Sadowsky. 2004. Arsenic availability from chromated copper arsenate (CCA)-treated wood. *J. Environ. Qual.* 33: 173-180.
  43. Knight, J.D., D. Gangotena, D. L. Allan, and C. J. Rosen. 2004. Screening common bean (*Phaseolus vulgaris*) genotypes for tolerance to low zinc availability using a chelate-buffered hydroponic system. *J. Plant Nutr.* 27:275-293.
  44. Uhde-Stone, C, Liu, JQ, Zinn, KE, Allan, DL, Vance CP, 2005. Transgenic proteoid roots of white lupin: a vehicle for characterizing and silencing root genes involved in adaptation to P stress. *Plant Journal* 44: 840-853.
  45. Liu, JQ, Samac, DA, Bucciarelli, B, Allan, DL, Vance CP, 2005. Signaling of phosphorus deficiency-induced gene expression in white lupin requires sugar and phloem transport  
*Plant Journal* 41: 257-268.

#### Invited Proceedings/Book Chapters

1. Jarrell, W.M. and D.L. Allan. 1986. Soil management for sustainable agriculture in California. *Proceedings, Sustainability of California Agriculture Symposium.* p. 78-93.
2. Allan, D. L., G. Rehm, J. Johnson, and D. Hicks. 1992. Soil and fertilizer potassium effects on root distribution in corn. *Proceedings, Roots of Plant Nutrition Conference,*

- July 8-10, Champaign, IL. p. 88-97.
3. Allan, D. L., L. Oldham, S. Evans, and G. Rehm. 1993. Hybrid and potash effects on root growth in ridge-till corn. Proceedings of the 23rd North Central Extension- Industry Soil Fertility Conference. Oct. 27-28, Bridgeton, MO.
  4. Allan, D.L., L. Oldham, G. Rehm and S. Evans. 1993. Hybrid and potash effects on root growth in ridge-till corn. Proceedings of the 13th Annual Crop Pest Management Short Course. Nov. 16-17, St. Paul, MN.
  5. Allan, D.L. and R.J. Killorn. 1996. Assessing soil N, P and K for crop nutrition and environmental risk. Chapter 11. In J. Doran and A. Jones (eds.) Methods for Assessing Soil Quality. SSSA Spec. Publ. 49, Madison, WI.
  6. Dorsey, J. and D. Allan. 1998. Monitoring soil. In The Monitoring Tool Box, by The Monitoring Project Team. Land Stewardship Project, White Bear Lake, MN and Minnesota Institute for Sustainable Agriculture (MISA), UM-St. Paul.

#### Research Station Bulletins/Reports

1. Allan, D. L., G. Rehm, and S. Evans. 1992. Matching precision placement of potash fertilizer to root growth dynamics in a ridge-till planting system. MAES Misc. Pub. 75 - 1992. Soils Series #134. p. 89-95.
2. Allan, D. L., S. Evans, G. Rehm, J. Johnson, L. Oldham, G. Nelson, A. Scobbie and D. Schultz. 1993. Matching precision placement of potash fertilizer to root growth in a ridge-till planting system. MAES Misc. Pub. 79-1993. Soil Series #136. p. 82-86.
3. Allan, D. L., G. Rehm, J. Johnson, A. Scobbie, D. Schultz and D. Hicks. 1993. Matching plant population and fertilizer management for profitable corn production. MAES Misc. Pub. 79-1993. Soils Series #136. p. 171-181.
4. Allan, D. L., S. Evans, G. Rehm, L. Oldham, G. Nelson, A. Scobbie, and T. Sellie. 1994. Matching precision placement of potash fertilizer to root growth in a ridge-till planting system. MAES Misc. Pub. 83-1994. Soil Series #140. p. 65-68.
5. Allan, D.L., G. Rehm, J. Johnson, A. Scobbie, T. Sellie, and D. Hicks. 1994. Matching plant population and fertilizer management for profitable corn production. MAES Misc. Pub. 83-1994. Soils Series #140. p. 148-153.
6. Bloom, P.R., H.T. Gollany, A.Lewandowski, N.C. Hansen, D.L. Allan, J. Strock, H. Chester-Jones, J. Moncrief, D. Mulla, M. Schmitt, M. Zumwinkle, and H.H. Cheng. 1999. Summary of the literature related to soils. P I.1-I.48 In Generic Environmental Impact Statement Related to Animal Agriculture: A summary of the literature related to the social, environmental, economic and health effects. Prepared for the Minnesota Environmental Quality Board, Minnesota's Bookstore, St. Paul.

#### Abstracts (last five years)

1. Li, A., D. Allan, S. Temple, J. Liu, and C. Vance. 2000. Phosphate stress in white lupin induces a proteoid root specific phosphate transporter. Am Soc Plant Biol Abstr
2. Miller, S., J. Liu, S. Temple, G. Gilbert, C. Menzhuber, D. Allan, and C. Vance. 2000. Molecular characterization of the acid phosphatase exuded from proteoid roots of P-stressed white lupin. Am Soc Plant Biol Abstracts.
3. Schulze, J., G. Gilbert, S. Temple, D. Allan, and C. Vance. 2000. Adaptation to phosphorus stress by white lupin: Nitrogen fixation and nodulation. Am Soc Plant Biol Abstracts.

4. Iremonger, C.J., P.H. Gowda, D.J. Mulla, and D.L. Allan. 2000. Predicting the impact of sustainable farming practices on water quality. Agron Abstr.
5. Allan, D.L., G. Boody, and D. French. 2000. The Monitoring Project: Scientists collaborating with farmers to achieve farm, community and landscape goals. Agron Abstr. (invited)
6. Alamgir, F., D.L. Allan, C.J. Rosen, and M.J. Sadowsky. 2000. Leaching of arsenic from chromated copper arsenate (CCA) treated wood in garden beds. Agron Abstr.
7. Li, A., C. Uhde, M. Damen, D. Allan, and C.P. Vance. 2000. Phosphorus stress induced genes in proteoid roots of white lupin. Agron Abstr.
8. Liu, J. M.J.H. Daemen, C. Uhde-Stone, A. Li, C.P. Vance and D.L. Allan. 2000. Phosphorus deficiency induced metabolic changes in plants. First International Symposium on Phosphorus in the Soil-Plant Continuum, 17-23 Sept., Beijing, P.R. China.
9. Liu, J., C.P. Vance, and D.L. Allan. 2001. LaMYB1 encodes a putative MYB transcription factor and is responsive to changes in phosphate status in white lupin (*Lupinus albus*). Quadrennial Joint Annual Meeting of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists, Providence, Rhode Island.
10. Graham, P.H. and D.L. Allan. 2001. Soil microorganisms and yield. Congress of the Brazilian Society of Soil Science, 2-6 July, Londrina, Brazil.
11. Uhde-Stone, C., A. Li, M.J.H. Daemen, D.L. Allan, and C.P. Vance. 2001. Isolation and characterization of white lupin proteoid root expressed sequence tags (ESTs) associated with plant hormones, p. 32-33. *In* Developments in Plant and Soil Sciences: Plant Nutrition. Food security and sustainability of agro-ecosystems through basic and applied research. Kluwer Academic Publishers. XIV International Plant Nutrition Colloquium, 28 July-4 Aug, Hanover, Germany.
12. Iremonger, C.J., P. H. Gowda, D.J. Mulla, and D.L. Allan. 2001. Predicting the impact on water quality of tillage on grazed land. American Society of Agronomy, Charlotte, NC. Agron Abstr.
13. Rahman, F.A., D.L. Allan, C.J. Rosen, and M.J. Sadowsky. 2001. Arsenic availability from chromated copper arsenate (CCA) treated wood: Uptake by plants and effects on soil microorganisms. American Society of Agronomy, Charlotte, NC. Agron Abstr.
14. Uhde-Stone, C., K. Zinn, M. Ramirez, D.L. Allan, and C.P. Vance. 2001. Phosphorus deficiency in white lupins: ESTs related to proteoid root development and biochemistry. Proc. Conf. Structure and Function of Cluster Roots and Plant Responses to Phosphate Deficiency, Perth, Australia, 5-9 November, 2001.
15. Uhde-Stone, C., K.E. Zinn, M. Ramirez-Yanez, A. Li, D.L. Allan, and C.P. Vance, 2002. Isolation and characterization of 2100 expressed sequence tags (ESTs) from white lupin proteoid roots. Plant Animal and Microbe Genomes 10<sup>th</sup> Conference, San Diego, CA, January, 2002
16. Liu, J., D. Samac, D. Allan, and C. Vance, 2002. Structural and functional analysis of different phosphate deficiency induced promoters from white lupin. 1<sup>st</sup> International Conference on Legume Genomics and Genetics: Translation to Crop Improvement, Minneapolis, MN, June, 2002.
17. Uhde-Stone, C., K. Zinn, M. Ramirez-Yanez, A. Li, D. L. Allan, and C. P. Vance, 2002. Plant adaptation to phosphorus stress: root developmental and biochemical changes in white lupin assessed by EST analysis. (Invited talk) 1<sup>st</sup> International Conference on

- Legume Genomics and Genetics: Translation to Crop Improvement, Minneapolis, MN, June, 2002.
18. Denton, M.D., J. Schulze, S.J. Temple, M.P. Russelle, D.L. Allan, D.A. Samac, and C.P. Vance, 2002. Over-expression of a nodule enhanced malate dehydrogenase increases nitrogen fixation in alfalfa. American Society of Plant Biologists, Denver, CO, July, 2002
  19. Liu, J., D. Samac, D. Allan, and C. Vance, 2002. Functional analysis of different phosphate deficiency induced promoters in transgenic alfalfa. American Society of Plant Biologists, Denver, CO, July, 2002
  20. Allan, D.L., E. Dyck, and K.D. Olson, 2002. Soil quality, profitability, and risk of conventional and organic cropping systems. ASA/SSSA/CSSA Annual Meetings, Indianapolis, IN, November, 2002
  21. Kuratomi, M., D.L. Allan, and E. Dyck, 2002. Soil quality assessment in alternative and conventional cropping systems. ASA/SSSA/CSSA Annual Meetings, Indianapolis, IN, November, 2002
  22. Liu, J., D. Samac, D. Allan and C. Vance, 2003. Regulation of phosphate deficiency induced genes in nitrogen-fixing nodules and in reproductive tissues of transgenic alfalfa. American Society of Plant Biologists meeting, Honolulu, HI, July, 2003
  23. Uhde-Stone, C. J. Liu, M. Ramirez, S. Miller, D. Samac, D. Allan, and C. Vance, 2003. Modification of the rhizosphere by cluster roots of phosphorus stressed white lupin. Midwest Rhizosphere Research Symposium, Danforth Plant Science Center, 19 Sept, St. Louis, MO.
  24. Liu, J. B. Bucciarelli, G. Hatlestad, D. Samac, C. Vance, and D. Allan, 2003. Characterization of phosphate deficiency induced genes from white lupin and analysis of promoter activity in transgenic plants. 2nd International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum 21-26 Sept, Perth, Western Australia
  25. Uhde-Stone, C. K. Zinn, J. Liu, S. Miller, A. Reinders, J. Ward, D. Allan and C. Vance, 2003. A MATE transporter gene from phosphorus deficient white lupin: Possible involvement in proteoid root function. 2nd International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum 21-26 Sept, Perth, Western Australia
  26. E.E. Evans, E. Dyck, P. Porter, P. Nickel, L. Nickel, C. Sheaffer, D. Wyse, D. Allan, and M. Harbur, 2003. An update of organic research and outreach at the University of Minnesota's Southwest Research and Outreach Center. ASA/CSSA/SSSA Annual Meetings 2-6 November, Denver, CO
  27. Boehm, J.L., J.L. Kovar, and D.L. Allan, 2003. Growth and phosphonate accumulation of bromegrass following phosphonate application. ASA/CSSA/SSSA Annual Meetings 2-6 November, Denver, CO
  28. Clayton, K., D.L. Allan and M. Schmitt, 2003. Effects of digested dairy manure on nutrients and soil quality. ASA/CSSA/SSSA Annual Meetings 2-6 November, Denver, CO
  29. Kuratomi, M., D.L. Allan and E. Dyck, 2003. Assessing soil quality of alternative and conventional cropping systems in SW Minnesota. ASA/CSSA/SSSA Annual Meetings 2-6 November, Denver, CO
  30. Clayton, K., D.L. Allan and M. Schmitt, 2003. Digested dairy manure effects on nutrients and soil quality. Energy Alley's Conference on Minnesota's Renewable Energy Research: Status and Opportunities, 14 November, Minneapolis, MN\

31. Zinn, K.E., J. Liu, C. Uhde-Stone, D.L. Allan, and C.P. Vance, 2004. Elucidation of cis-elements in white lupin phosphorus deficiency signaling. American Society Plant Biology. Abstracts 95. Orlando, FL.
32. Clayton, K., D. Allan, and M. Schmitt, 2004. Effects of digested dairy manure on soil nitrogen and corn yield. Soil and Water Conservation Society. July 24-28, 2004. St. Paul, MN
33. King, J.Y., M. Kuratomi, and D.L. Allan, 2004. Agricultural management impacts on greenhouse gas emissions: Field measurements. Soil Science Society of America, Oct 31-Nov 4, 2004. Seattle, WA
34. King, JY, DL Allan, JS Strock, JC Bell, HE Van Vleck, SJ Abreu, KA Piotrowski, 2005. Investigating C and N dynamics using stable isotope tracers in corn. Soil Science Society of America 69<sup>th</sup> Annual Meeting, November 6-10, 2005.
35. Yamagishi, M, Liu, JQ, Uhde-Stone, C, Bucciarelli B, Allan D, Osaki M, and Vance C. 2005. Expressional analysis of a novel R2R3-MYB gene in white lupin roots. Plant and Cell Physiol. 46: S197-S197 Suppl.
36. Liu, J., M. Yamagishi, C. Uhde-Stone, B. Bucciarelli, D. Samac, D. Allan and C. Vance. 2005. Shoot signals and molecular regulation of P-deficiency induced genes in cluster roots of white lupin. 15<sup>th</sup> International Plant Nutrition Colloquium. Beijing, China.

#### **RESEARCH PRESENTATIONS** (last five years)

1. 'Conventional and alternative farming systems in the Chippewa River and Sand Creek Watersheds: Effects on water quality.' Enhanced Landscape, Food Systems, Human and Animal Health Conference, St. Paul Campus (4/28/00).
2. 'Cluster roots and related adaptations to phosphorus deficiency in white lupin.' Biology Dept., The College of St. Catherine, St. Paul, MN (5/4/00).
3. 'Phosphorus deficiency induced metabolic changes in plants' First International Symposium on Phosphorus in the Soil-Plant Continuum. Beijing, P.R. China (9/19/00).
4. 'Soil fitness and function.' Minnesota Seeding Contractors Association annual meeting, St. Cloud, MN. (12/14/01).
5. 'Soil quality, profitability, and risk of conventional and organic cropping systems.' Invited talk at ASA/CSSA/SSSA national meetings, Indianapolis, IN. (11/14/02)
6. 'White lupin's adaptation to phosphorus stress: Gene function and regulation.' CSIRO Plant Industry Division, Canberra, NSW, Australia (9/9/03).
7. 'Fertilizer value of digested manure compared to raw manure' Invited talk at 3rd Annual BioCycle conference on Renewable Energy from Organics Recycling, Minneapolis, MN (11/18/03).
8. 'The role of plant roots in soil ecology and soil quality' Invited talk at Soil Ecology and Soil Quality Workshop, Wisconsin Soil Quality Team, Merrimac, WI (8/11/04).

#### **TEACHING ACTIVITIES**

##### Graduate Courses:

*Soil 5611.* Soil Biology and Fertility, 3 Cr.

Spring semester, yearly. Co-taught with Peter Graham. Introduces students to the range of organisms found in soil and the soil traits that influence their numbers and diversity. Examines questions of soil fertility, quality, nutrient cycling and sustainability, and the impact of human activities on processes involving microbes and plants growing in soil. Core course in the graduate program. Attended by graduate students in Agronomy, Ecology, Forestry, Horticulture, Plant Biology and Plant Pathology, as well as Soil Science.

*Soil 8005.* Supervised Classroom or Extension Teaching Experience, 2 Cr.  
Fall semester, yearly. Co-taught with Steve Simmons (Agronomy) and Emily Hoover (Horticulture). Discussion of various teaching topics. Provides graduate students with a range of teaching experiences and assists them in formulating a personal teaching philosophy.

*Soil 8123.* Research Ethics, 0.5 cr.  
Spring semester, alternate years. Co-taught with Linda Kinkel (PLPa). Lectures and case-based discussion of various topics in research ethics. Designed to meet Graduate School requirement.

*Soil 8550.* Directed Teaching Experience, 1 cr.  
Offered both semesters. Supervised teaching experience which allows for feedback to student and satisfies teaching requirement in the graduate program.

#### Undergraduate Courses:

*Soil 3612.* Soil and Environmental Biology, 3 cr.  
Spring semester, yearly. Co-taught with Peter Graham, concurrent with 5611. Similar topic coverage but course requirements are less demanding.

#### Guest Teaching:(last five years)

*AGRI 1000H* guest lecture for Nick Jordan on farmer-researcher participatory research. Fall, 2000.

*HORT 8045* guest lecture for Bud Markhart on phosphorus limitations to plant growth and adaptations to P stress. Fall, 2000, 2002.

#### Undergraduate Supervision

Plant Biology undergraduate research project, 2001 (Kelly Zinn)

#### Instructional Improvement:

Fall, 1987. College of Agriculture “Active Writing and Thinking Kick-Off”

Fall, 1987. Project Assist “Preparing a Design Document for Computer Based Instruction.”

Fall, 1991. Attended “Use of Decision Cases in Agriculture” conference.

1991-1992. Bush Foundation Excellence in Teaching Fellow. Attended monthly seminars and annual conference.

1993-1994. Attended Decision Case Seminar Series and Workshops.

Summer, 1996. Attended Bush Summer Workshop “Building Inclusive Classrooms.”

1997-1998. Organized and attended five Bush Teaching and Learning Workshops for the Department of Soil, Water and Climate.

1999-2000. Participated in the Technology Enhanced Learning (TEL) Workshop, Bush Program.

Spring, 2000. Attended Power Point Presentation Survival Skills course (Digital Media Center) 2001-2002. Bush Fellow in the program for “Enhancing Student Learning through Innovative Teaching and Technology Strategies”

Course Development:

Obtained grant from Office of Academic Affairs (U of M) for TA training and development (\$3,000). Steve Simmons, co-PI. Developed three videos (lecture, alternatives to lecture, and extension teaching) and three case studies as teaching tools for Soil 8000. 1989-90.

Assisted in development of Graduate Minor in Sustainable Agriculture and in Agroecology course (required core course for the minor). 1994-95.

Worked with Peter Graham and Jenni Swenson to develop web-based instruction units for 3612/5611 and an on-line version for distance learning. 2000-2002.

Designed Research Ethics class (APS/Pbio/PIPa/Soil 8123) to meet graduate student research ethics requirement. 2002-03.

Teaching Related Publications:

Simmons, S. and D. Allan. 1990. Alice Waters: A case of a non-traditional student. (A case study and teaching note developed for use in Agro/Soil 8000).

Allan, D. and S. Simmons. 1990. Honor code violation. (A case study and teaching note developed for use in Agro/Soil/Hort 8000).

Allan, D. and S. Simmons. 1990. Student motivation. (A case study and teaching note developed for use in Agro/Soil/Hort 8000).

Other Activities

Co-leader of 4 workshops on Classroom Management for TA Development Program, Academic Affairs (Fall 1991 and 1992) and 1 workshop on “Strategies for Enhancing Student Motivation and Participation in the Classroom” (Spring 1992).

Faculty mentor for PIBio graduate student in Teaching Opportunity Program for Doctoral Students (TOPDS). 1994-1995.

## **OUTREACH ACTIVITIES**

Public Presentations: Workshops / Meetings / Field Days (last 5 years)

-Presentation on monitoring soil quality and results of the Sustainable Farming Systems project at field day titled “A Case for Streamside Grazing” on the Haugen dairy farm in Canton, MN (6/27/01).

-Presentation on “Effects of management system and rotation length on soil properties”, results from the VICMS trials at SWROC, 4th Organic Field Day, Lamberton, MN (8/17/01).

-Presentation on “Managing soil fertility in organic systems” for the Field Course in Organic Management at Southwest ROC, Lamberton, MN (7/25/02).

- Organic Field Day presentation on “Effects of crop rotations on soil quality in organic systems” at Southwest ROC in Lamberton, MN (7/26/02)
- Presented at Field Day on Dennis Haubenschild’s farm “Effects of anaerobically digested manure on crop yields and soil quality” Princeton, MN (8/20/02).
- Presented “Healthy soils: Science and practice” with Jodie DeJong Hughes at the MN Organic and Grazing Conference at St Cloud , MN (1/25/03)
- Presented a workshop on “Research relevant to your organic system” with Elizabeth Dyck at Upper Midwest Organic Farming Conference 2/27-3/1/03, LaCrosse WI (2/28/03)
- Organic Field Day presentation on “Using soil quality indicators to assess soil health”, with Jodi DeJong-Hughes at Southwest ROC in Lamberton, MN (7/25/03).
- Organic Field Day presentation on “Nutrient management for organic systems” at Southwest ROC in Lamberton, MN(7/25/03).
- Organic Field Course presentation on “Soil quality in organic crop rotations”, at Southwest ROC in Lamberton, MN (7/13/04).
- Organic Field Course presentation on “Designing crop sequences and rotations for the transition period and beyond” at Southwest ROC in Lamberton, MN (7/13/04)
- Organic Field Course presentation on “Field Practicum for Organic Systems: Soil Fertility, Composts and Manures”, with LaMoine Nickel in Lamberton, MN (7/14/04).
- Organic Field Day presentation on “Soil quality in organic crop rotations”, at Southwest ROC in Lamberton, MN (7/20/04)

## **SERVICE**

### National or International

- SSSA S475-Emil Truog Soil Science Award Committee 1989-1991.
- Organized ASA S-2 session “Surface Chemistry of Cell Walls and Membranes,” Atlanta, 1987.
- Moderator for ASA S-2 session “Adsorption - Desorption Processes in Soils,” Anaheim, 1988.
- Moderator for ASA S-4 session “Micronutrients,” Las Vegas, 1989.
- Coordinator for ASA, S-3 teaching methods session “Rhizosphere and Mycorrhizae,” Denver, 1991.
- S-4 liaison for S-2 Rhizosphere Chemistry Working Group, 1991-1992.
- Chair for S-2 Rhizosphere Chemistry Working Group, 1993-1994.
- SSSA Book Feasibility Committee - Rhizosphere Interactions. 1993-1994.
- NRI-CGP panel for Soils and Soil Biology, 1994.
- SSSA Book Feasibility Committee-Soil Quality. 1997 - 1998.
- A440 Ciba-Geigy Award in Agronomy Committee 1997-1999. (Served as chair in 1999).
- SSSA Book Series Committee (S370). 1999-2002. (Served as S-4 representative).
- International Steering Committee to develop International Symposia on Phosphorus in the Water-  
Soil-Plant Continuum. 1999-present.
- SSSA Fellows Committee. 2005-present.

### Statewide or regional committees

- NCR-59 Representative for University of Minnesota, 1989-present.
- NCR-59 Secretary, 1991.
- NCR-59 Chairperson, 1992.

Planning Committee for 1995 Minnesota Soil and Water Conservation Society Annual Meeting.  
Co-Chair, NCR-59 Subcomm.on soil quality publication for policymakers and public. 1997-98.  
NCR-59 Chairperson, 2006.

#### University and College committees

Search and Screening Committee for Assistant Extension Specialist - Soil Fertility, 1987.  
Search and Screening Committee for Terrestrial Microbial Ecologist - 1988.  
Organizing Committee for First Annual Symposium on Ecology and Agriculture Creating a  
Sustainable Agriculture for the Future”, April 1988, sponsored by the University of  
Minnesota, College of Agriculture.  
COA representative to 4th Annual U of M Honors Retreat, November 1988.  
Scholastic Affairs Committee, College of Agriculture, 1989-1991. Prepared history of Master of  
Agriculture Program for external review, 1991.  
Cedar Creek Natural History Area Advisory Committee, 1988-1991.  
Curriculum Committee, Graduate Program in Plant Biological Sciences, 1990-1991.  
Search and Screening Committee for Associate Dean of Research, College of Agriculture, 1991-  
1992.  
Steering Committee, COAFES, Program for Decision Cases, 1992-95. College of Agriculture.  
COA Team for Women in Science and Engineering (WISE) initiative of the Commission on  
Women. 1993-96.  
Finance Committee, Graduate Program in Plant Biological Sciences, 1993-1994.  
Search and Screening Committee for Lamberton Cropping Systems Agronomist, 1994.  
Strategic Planning for the Biological Sciences Committee on Research, 1994-1995.  
Steering Committee, Graduate Minor in Sustainable Agriculture, 1994-1995.  
Soil Science Department Head Review Committee, 1994-95.  
Steering Committee, Graduate Program in Plant Biological Sciences, 1994-97.  
Written Preliminary Exam Committee, Graduate Program in Plant Biological Sciences, 1997-99.  
Scholastic Affairs Committee, COAFES, 1997-99.  
Elwell Agroecology Farm Oversight Committee, SWROC, 1997-  
COAFES Prioritization Process. Agriculture, Food and Human Health Theme Committee, 2000.  
Search Committee for Soil, Water, and Climate Department Head. 2001-2002.  
Search Committee for Executive Director of the Minn. Institute of Sustainable Agriculture, 2001.  
Faculty Development Committee, COAFES, 2001-2005.  
Building Student Learning Communities, COAFES, 2002.  
DOVE Graduate Fellowship Committee, Graduate School, 2004-2005.  
Working Group on Graduate Education in the NewCo, Fall, 2004.

#### Departmental Committees

Graduate Student Awards 1987-91.  
Growth Chambers 1987-99.  
Undergraduate Instruction: Student Relationships, 1987-91.  
Colloquium Committee, Chair, 1991-99.  
International Committee, 1991-99.  
Search Committee for Endowed Chair, 1992.  
Preliminary Examination Committee, 1993-1994.  
Graduate Studies Committee, 1994-2001.

Search and Screening Committee for Lamberton Soil Management Position, 1997-1998.  
Post Tenure Review Committee, 2000-02.  
Search and Screening Committee for Dept. Head of Soil, Water and Climate, 2001-02.  
Chair (as Director of Graduate Studies) of Graduate Studies Committee, 2001-2005  
Faculty Consultative Committee, 2002-2005

Other Activities (last five years)

- Organized “A Scientific Assessment of the Ecological Impacts of Transgenic Plants and Microbes: Potential Benefits and Risks”, a half-day symposium on St Paul Campus sponsored by COAFES (5/9/00).
- Presentation on soil quality research to the League of Women Voters (Roseville, Maplewood, Falcon Hts) during tour of St Paul Campus (5/16/00).
- Taught soils to 40 4<sup>th</sup> graders at Mounds Park Academy, Maplewood, MN (12/13/01)
- Taught 60 Mounds Park Academy 5<sup>th</sup> graders a hands-on science unit about soils. Maplewood, MN (10/3/02).
- Invited to serve on expert panel for review of the research program at the USDA, ARS, Northern Grain Insects Research Laboratory Dec 1-4, 2003 in Brookings, SD
- Taught 60 Mounds Park Academy 6<sup>th</sup> graders about careers in soil and environmental science, (12/8/03)
- Invited to serve on USDA-CSREES-NRI Managed Ecosystems Panel, May 31-June 2, 2005 in Washington, DC.