

**CURRICULUM VITAE FOR THOMAS E. LOYNACHAN**  
(June 2013)

**Thomas E. Loynachan:**

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Iowa State University  
Ames, IA 50011

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**Degrees received:**

|       |                                 |      |
|-------|---------------------------------|------|
| B.S.  | Iowa State University           | 1968 |
| M.S.  | Iowa State University           | 1972 |
| Ph.D. | North Carolina State University | 1975 |

**Professional positions held:**

|              |   |
|--------------|---|
| 1968         | High School Teacher – Grinnell, IA                      |
| 1968-70      | U.S. Army (draft)                                       |
| 1970-72      | Teaching Assistant - Iowa State University              |
| 1972-75      | Teaching Assistant - North Carolina State University    |
| 1975-78      | Assistant Professor - University of Alaska              |
| 1978-81      | Assistant Professor - Iowa State University             |
| 1978-83      | Associate Member of Graduate Faculty                    |
| 1981-85      | Associate Professor - Iowa State University             |
| 1983-present | Full member of Graduate Faculty                         |
| 1985-present | Professor - Iowa State University                       |
| 1998-2001    | Interim Head - Department of Agronomy                   |
| 1998-present | Director of Graduate Education - Department of Agronomy |

**Teaching responsibilities:**

Budgeted 90% teaching and 10% research.

Currently teaches five courses per year: Agronomy 354, *Soils and Plant Growth*, 3 cr. (teaches 1 lecture section fall and 1 lecture section spring semesters), 160 students, Fall and Spring; Agronomy 485, *Soil and Environmental Microbiology*, 3 cr. (1 lecture-2 lab sections [teaches both lecture and two lab sections]), 28 students, Fall; Agronomy 500, *International Orientation Seminar*, 1 cr. 10 students, Fall; Agronomy 496, *Agricultural Travel Course*, 3 cr. (co-taught), 26 students; Agronomy 512 *Soil-Plant Environment*, 3 cr. (distance education), 25 students; Agronomy 585, *Soil Microbiology and Biochemistry*, 3 cr. (crossed listed with Agron 485). Also have taught: Agronomy 110, 156, 400, 401, 410, 490, 495, 496, 590, 593B, 599G, 699E, and 699G.

Serves as Director of Graduate Education for the majors Agricultural Meteorology, Agronomy, Crop Production and Physiology, Plant Breeding, and Soil Science.

Currently advises 40 undergraduate students in Agronomy and Environmental Science and serves on ca. 35 graduate program-of-study committees (about 2/3s in the Distance Masters of Science in Agronomy program).

### **Research responsibilities:**

Have served as major professor for 27 students, 16 who received Master degrees and 11 who received Ph.D. degrees. Now have two off-campus M.S. students and one on-campus M.S. student. Current research activities center around organismal ecology in soil, including establishment, persistence, and environmental interactions of organisms. Efforts are mainly directed at field ecology relationships. Earlier work involved *Bradyrhizobium* on soybean N<sub>2</sub> fixation and more recent work the mycorrhizae of soybean (beneficial fungi).

### **Professional societies:**

American Association for the Advancement of Science  
American Society of Agronomy  
American Society of Microbiology  
Council for Agricultural Science and Technology  
Iowa Academy of Science  
National Association of Colleges and Teachers of Agriculture  
Soil Ecology Society  
Soil Science Society of America

### **Honorary societies:**

Gamma Sigma Delta  
Phi Beta Delta  
Phi Kappa Phi  
Sigma Xi

### **Honors and awards:**

Raymond and Mary Baker Agronomic Excellence Award, 1982  
Student Alumni Association Outstanding Academic Advising Award, 1982  
Outstanding Academic Advisor, College of Agriculture, 1983  
Louis Thompson Award for Scholarly Achievement in Teaching, 1985  
National Association of Colleges and Teachers of Agriculture Teaching Fellow, 1989  
National Association of Colleges and Teachers of Agriculture Tressler-AVI Award (teaching and research), 1989  
Iowa State University Cardinal Key, 1989  
Iowa State University Legislative Teaching Excellence Award, 1990  
Teaching Award of Merit, ISU College of Agriculture, NACTA, 1991  
Iowa State University Foundation Award for Mid-Career Achievement in Teaching, 1991  
National Association of Colleges and Teachers of Agriculture Ensminger-Interstate Distinguished Teacher Award, 1991  
Soil Science Education Award, Soil Science Society of America, 1992  
VEISHEA Outstanding Professor, College of Agriculture, 1993  
Certificate of Excellence, Development of Agronomic Educational Video (longer than 30 minutes), American Society of Agronomy, 1993  
Fellow, American Society of Agronomy, 1993  
Regents' Faculty Excellence Award, 1995  
Iowa State University Alumni Association Faculty Citation, 1996  
American Society of Agronomy Agronomic Resident Education Award, 1996  
Honorary Professor, National Agricultural University of the Ukraine, 1998  
Fellow, Soil Science Society of America, 2000  
Soil Science Society of America Journal Editors' Citation for Excellence, 2001

Teaching Award of Merit, ISU Gamma Sigma Delta, 2004  
College of Agriculture Outstanding Achievement in Teaching Award, 2005  
Innovator's Award (team award to Distance MS in Agronomy program), Iowa Distance Learning Association, 2006  
Team Award (award to Distance MS in Agronomy program), College of Agriculture, 2007

**Grants and contracts received:**

Oil Spill Reclamation. W. W. Mitchell, T. E. Loynachan, and J. D. McKendrick. Alyeska Pipeline Service Company. 1975 (\$128,000), 1976 (\$143,000), 1977 (\$117,000).  
Alder For Mineland Restoration in Cold Dominated Climates. T. E. Loynachan. USDA Competitive Research Grant. 1977 (\$20,500).  
Nitrification Inhibitors. T. E. Loynachan. Dow Chemical Company. 1979 (\$5,600), 1980 (\$8,000).  
Alaskan Fertility Trials. T. E. Loynachan. University of Alaska. 1980 (\$5,800).  
Inoculation of Groundnuts in Sudan. T. E. Loynachan. USAID Competitive Grant. 1980-1984 (\$69,000).  
Evaluation of Volatile Organic Acids as Nitrification Inhibitors. T. E. Loynachan. Kemin Industries, Inc. 1982 (\$500).  
Competitiveness of Rhizobium japonicum in Iowa Soils. T. E. Loynachan. Allied Corporation. 1982-1986 (\$128,690).  
Construction of Soil Monoliths for Classroom Instruction. D. Wysocki, T. E. Loynachan, and J. W. Schafer. ISU Council on Instruction. 1983-1984 (\$1,062).  
Field and Genetic Analysis of Chinese Rhizobia. A. Atherly and T. E. Loynachan. Iowa Soybean Promotion Board. 1986-1989 (\$37,050).  
Rhizobial Competition in the Soil. T. E. Loynachan. Iowa Biotechnology Council. 1986-1989 (\$33,394).  
Optimizing Microbial Associations to Enhance N and P Soil Nutrient Availability. T. E. Loynachan and H. S. McNabb, Jr. The Leopold Center. 1989-1992 (\$19,850).  
Development of a Computerized Soil Fertility Term Problem. F. R. Troeh and T. E. Loynachan. ISU Council on Instruction. 1989-1990 (\$1,480).  
Video Development of Life in the Soil. T. E. Loynachan. ISU Council on Instruction. 1992-1993 (\$1,470).  
Genetic Exchange Between Bacillus thuringiensis and Other Microbes in Soil. R. E. Andrews and T. E. Loynachan. United States Department of Agriculture, NRI Competitive Grant. 1993-1996 (\$160,000).  
Endomycorrhizae in the Soybean Field--Beneficial or Harmful. T. E. Loynachan. Iowa Soybean Promotion Board. 1995-1998 (\$55,436).  
*Tn916* Mediated Genetic Exchange From Genetically Engineered Microbes to Soil Microbes. R. E. Andrews and T. E. Loynachan. United States Department of Agriculture, NRI Competitive Grant. 1997-2000 (\$150,000).  
Integrated Soil and Weed Management Production Systems for Perennial Food Crops. G. R. Nonnecke, C. Dilley, and T. E. Loynachan. The Leopold Center. 2006-2008 (\$39,310).  
Autoclave for Room 2530 Agronomy Hall. T. E. Loynachan. Agronomy Equipment Fund. 2008 (\$37,500).  
Reducing Pesticide Use in Iowa Vineyards: Alternatives to Herbicides for Vineyard Weed Management. G. R. Nonnecke, P. Domoto, and T. E. Loynachan. The Leopold Center. 2008-2010 (\$25,776).  
A Modeling Approach to Unifying Concepts Taught in a Professional MS Agronomy Curriculum. K. J. Moore, F. Miguez, A. Knapp, T. Loynachan, and E. A. Thompson. USDA Higher Education Challenge Grant. 2011-2013 (\$140,171).  
Role of the Plant Microbiome in Enhancing Plant Drought Tolerance. G. A. Beattie, T. E. Loynachan, and X. Huang. ISU Plant Science Institute. 2011-2013 (\$119,320).

### **Department contributions:**

Ad hoc Committee to Establish Criteria for Promotion and Tenure, 1988-1990 Chair  
Ad hoc Committee to Revise Departmental Promotion and Tenure Document, 1990-1991, Chair; 1994-1995, Chair; 1995-1996, Chair; (Governance Document) 2002, Chair; 2003-2004 Chair  
Ad hoc Committee to Review Teaching Activities of TAs/RAs, 1991 Chair  
Ad hoc Committee to Review Preliminary Written Examination in Soil Science, 1993 Chair  
Ad hoc Committee to Screen for New Soil Microbiologist, 1994-1995 Chair  
Ad hoc Committee to Screen for New Soil Chemist, 1997-1998  
Ad hoc Committee to Screen for New Crops Teacher, 1997-1998  
Ad hoc Strategic Planning Committee, 1996-1997 Chair  
Advisor to Agronomy Club, 1979-1980, 1989-1991, 2005-2007  
Advisor to Agronomy Club Banquet Committee, 1984-2008  
Agronomy Advisory Council, 1987-1989; 1998-2001, 2004-2007  
Agronomy Graduate Advisory Council, 2009-present Chair  
Departmental Assessment Committee, 2011-present  
Director of Graduate Education, 1998-present  
Executive Committee, Microbiology Interdepartmental Major, 2002-2007  
Graduate Curriculum Committee, Microbiology Interdepartmental Major, 2002-2008  
Graduate Program and Seminars Committee, 1991-1998  
Graduate Program Committee (MIPM), 1992-1994  
Interim Department Head, 1998-2001  
Promotion and Tenure Committee (MIPM), 1994-1998  
Promotion and Tenure Committee (Agronomy) (elected by peers), 2002-2008; 2008 Chair; 2013  
Resident Teaching Panel and Curriculum Committee, 1978-2010; 1987-1989 Chair  
Scholarships and Recognition Committee, 1978-1987, 1990-1999  
Subchair for Undergraduate and Graduate Students on Campus, 1982-1987  
Soil Science Panel, 1983-2007; 2004-2007 Chair  
Soil Science Diagnostic Examination Committee, Chair 1981-2010  
Soil Science Uniform Preliminary Examination Committee, 1983-2011  
Student Activities and Placement, 1978-2010

### **College contributions:**

Academic Advising Committee, 1987-1988  
Advising Training Committee, 2013-present  
Ad hoc Associate Dean Search Committees (both National and State Assoc. Deans), 1995  
Ad hoc Committee to Draft College Promotion and Tenure Document, 1989-1990 Chair  
Ad hoc Committee to Draft College of Agriculture Governance Documents, 1993-1994, co-Chair subcommittee for Revision of College Promotion and Tenure Document  
Ad hoc Committee for Morrill Professor Award, 2013  
Ad hoc Committee to Review Opportunities of Students for International Travel, 1996-1998  
Agriculture Council Advisor, 1988-1991  
Agricultural Faculty Council, 1994-1996  
College Awards Committee, 2004-2012  
B.S. Off-Campus Supervisory Committee, 1991-1994; 1992-1994 Chair  
Coordination Committee for Use of Computers in Instruction in the College of Agriculture, 1982-1983

Council on Instruction, 1981-1985  
     Subchair for Teaching Seminar, 1983-1984  
 Curriculum Committee, 1987-1988  
 Gamma Sigma Delta, 1978-present  
     Department Liaison, 1983-1985, 2006-present  
     Vice President, 1985-1986  
     Banquet Chair, 1986  
     President, 1986-1987  
     Executive Committee, 1985-1988  
     Chair, Nominating Committee, 1988-1989  
     Chair, Program Committee, 1990 Conclave, 1988-1990  
 Honorary Recognition Coordination, 1987-1988  
 Honors Program Committee, 1978-1989; 1984-1989 Chair  
 Long-Range Strategic Planning Committee, 1987-1990  
 NACTA Planning Committee for 1997 National Conference at ISU, 1995-1997  
     Transportation Chair  
 MIAC Ag Travel Planning Committee, 1990-2000  
     ISU MIAC College Representative, 1990-2000  
 Outstanding Advisor Selection, 1986-1988; Chair, 1987-1988  
 Search Committee Chair, College of Agriculture Placement Officer, 1998  
 Search Committee Chair, Horticulture Department Chair, 2001  
 Science in Agriculture, 1987-1988; Banquet Master of Ceremonies, 1987  
 Transfer/Articulation Committee, 1988-1991; 1990-1991 Chair  
 Visiting Professor Program, 1992-2010

### **University contributions:**

Academic Honoraries Council, 1986-1987  
Ad hoc Committee on Conflict of Interest and Commitment Implementation, 1993-1994  
     Chair  
Ad hoc Committee on Diversity and Internationalization of the Curriculum, 1993-1994  
Ad hoc Committee on Internationalization, 1989-1990  
     Subcommittee on Economic Development, 1989-90 Chair  
Ad hoc Committee of Provost to Review Teaching Awards, 1994  
Ad hoc Committee to Review the Office of the President, 1996-1998  
Ad hoc University Governance Document Review Committee, 2005-2007  
 All University Judiciary Committee, 2002-2008, 2002-2008 Co-Chair  
 Experience Iowa State faculty speaker, 1987-1997  
 Faculty Council, 1980-1983  
     Chair, Academic Affairs Standing Committee, 1982-1983  
 Faculty Review Hearing Board, Chair, 2004; 2010 Chair  
 Faculty Senate, 1991-1997 (at-large College of Agriculture representative); 2010-present  
     (departmental representative)  
 Faculty Senate Academic Affairs Council, 1991-1993, 1994-1997  
     Secretary, 1991-1992  
     Chair, 1995-1996, 1996-1997  
 Faculty Senate Strategic Planning Committee, 1999-2000  
 Graduate Council, 2004-2007  
     Chair, Postdoctoral Policies 2005-2006, 2006-2007  
 ISU Student Veterans of America (ISUSVA) Club, Advisor, 2007-present  
 Midwestern Association of Graduate Schools MAGS Distinguished Master's Thesis  
     Award Committee, 2008-present  
 Margaret Ellen White Award Committee, 2010  
 Phi Kappa Phi, 1978-present

Departmental Liaison, 1984-1986  
Vice Chair, Graduate Student Selection, 1986-1987  
Chair, Graduate Student Selection, 1987-1988  
Search Committee for Judicial Affairs Program Coordinator, 2008  
Search Committee for Assistant Dean of Students and Director of Judicial Affairs, 2008  
Sigma Xi, 1978-present  
Executive Committee, 2003-present  
Program Chair, 2006-2007  
President, 2007-2008  
Summer Orientation Faculty/Administrator Panel, 1987-2003, 2006, 2009-present  
Undergraduate Admissions Policy Advisory Committee, 1981-1982 Chair  
University College and Departmental Document Review Committee (CDDR), 2008-present, 2008-2012 Chair  
University Calendar Committee, 1983-2002; 1992-2002 Chair  
University Governance Council, 2008-present  
University Honors Program Committee, 1984-1989  
University Instructional Development Grants Committee; 1993 Chair; 1997 Chair

**Professional contributions:**

Associate Editor, Agronomy Journal - Soils, 1992-1998  
American Society of Agronomy Ad hoc Committee to Evaluate and Make Recommendations Concerning the Journal of Agronomic Education (A335.4), 1986-1987  
American Society of Agronomy Ad hoc Committee to Study and Report on the Needs, Feasibility, Format, and Name for a Journal to Report Research and Interpretative and Scholarly Reports on Plant Biotechnology (ACS398), 1984  
American Society of Agronomy Ad hoc Committee to Determine Feasibility of Book on Rhizosphere Interactions (ACS394.34), 1993-1994 Chair  
American Society of Agronomy Board of Directors, 2002-2005  
American Society of Agronomy Division A-1a, 1992-1993 Chair-elect; 1993-1994 Chair  
American Society of Agronomy Membership Committee (ACS233), 1981-1994  
American Society of Agronomy National Outstanding Student Recognition Program Committee, 1993-1994 Chair  
American Society of Agronomy National Student Awards Committee, 1980-1983; 1993-1995; 1994-1995 Chair  
American Society of Agronomy Nomination Committee for Subdivision A-1a (A111.01A), 1994-1996; 1994-1995 Chair,  
American Society of Agronomy Program Planning Committee (ACS711), 1998-1999  
American Society of Agronomy Student Photography Contest Committee, 1980-1983; 1982-1983 Chair  
American Society of Agronomy Student Essay Contest Committee, 1979-1982; 1981-1982 Chair  
American Society of Agronomy Student Research Symposium Contest Committee, 1997-2000  
American Society of Agronomy Agronomic Education Award Committee, 1997-1999; 1998-1999 Chair  
American Society of Agronomy General Awards Committee (A431), 1998-2000  
EPA STAR Review Committee, 2009-2010  
Francis Clark Lectureship Committee (S711.11), 1998-2000; 1999-2000 Chair  
Iowa Chapter of American Society of Agronomy, 1978-1994  
Vice President, 1980-1981  
President, 1987-1988  
Iowa Farm Bureau Federation Scholarship Review Committee, 2004-present

NACTA Iowa State University Campus Representative, 1990-1997  
 Review Panel Member, Plant Production and Protection (Biology), USDA SBIR  
 Competitive Grant Program, Washington, D.C., February 1994  
 12th North American Symbiotic Nitrogen Fixation Conference Organizing Committee,  
 1989  
 Soil Science Society of America Board of Directors, 2002-2005  
 Soil Science Society of America Distinguished Service Award Committee (S477), 2002-  
 2005  
 Soil Science Society of America Division S-3 Officer (Soil Biology), 1997-98 Chair-elect,  
 1998-99 Chair  
 Soil Science Society of America Francis and Evelyn Clark Soil Biology Scholarship  
 Committee (S490), 2002-2005; 2004-2005 Chair  
 Soil Science Society of America Honorary Membership Committee (S402), 2002-2005  
 Soil Science Society of America K-12 Committee (S591), 2006-present; 2007-2009  
 Chair  
 Soil Science Society of America Nominations Committee (S101), 1999  
 Soil Science Society of America Soil Science Education Award Committee (S480), 1992-  
 1995; 2009-2012; 2012 Chair  
 Soil Science Society of America Soil Ad hoc Book Feasibility Committee on "Soil  
 Physical, Chemical, and Biology Ecology" (S392.07), 1992-1993 Chair  
 Soil Science Society of America Soil Writing Committee for book "Soils and the  
 Environment" (S373.09), Chair 1995-1998  
 Soil Science Society of America Special Awards Committee (S491.2), 1999-2001  
 Southern Illinois University Departmental Review Team, 2002  
 Texas A&M University Soil Science Curriculum Review, 2009  
 US Environmental Protection Agency, Biotechnology Science Advisory Committee (TS-  
 788), 1988-1995  
 World Soybean Research Conference III Program Committee, 1984

### **International travel and activities:**

Sudan, summers of 1980, 1981, and 1982, USDA Competitive Grant to evaluate  
 nitrogen fixation rhizobia of peanut  
 Columbia, fall of 1982, CIAT Nitrogen Fixation Conference  
 China, Japan, Taiwan, Hong Kong, summer of 1987, co-lead ISU Ag Travel Course with  
 15 students  
 Ukraine, spring of 1991, participate in Scholars Conference; fall of 1994 and fall of 1995,  
 assist National Agricultural University of the Ukraine to modernize undergraduate  
 teaching curriculum; spring of 1998 and of fall 1998, review and modernize M.S.  
 degree program  
 Costa Rica, spring of 1995, Scholars Abroad Program  
 Argentina, summer of 1995, taught 3-wk soil biology shortcourse for college teachers  
 Ecuador, winter of 1996/97, co-lead Ag Travel Course with 21 students  
 India, spring of 2000, invited presentation at international conference on managing  
 mycorrhizae as a natural resource  
 Peru, spring of 2001, participated in joint planning activity on sustainable agriculture with  
 personnel from La Molina University, Lima  
 Australia, spring of 2008, co-led ISU Ag Travel Course with 27 students  
 Argentina, spring of 2009, co-led ISU Ag Travel Course with 29 students  
 Spain, spring of 2010, co-led ISU Ag Travel Course with 25 students  
 Australia, spring of 2011, co-led ISU Ag Travel Course with 22 students  
 Argentina, spring of 2012, co-led ISU Ag Travel Course with 27 students  
 Egypt, Dec/Jan of 2012/2013, invited presentation and Ph.D. defense  
 Spain, spring of 2013, co-led ISU Ag Travel Course with 27 students

### **Community service:**

Kelley Bethany Church  
Member, 1978-present  
Board of Trustees, 1983-1987  
Church Council, 1983-1987, 1989-91  
Congregational President, 1989-91  
Constitutional Revision Committee, 1992-1994  
Board of Deacons, 2002-2003  
Visioning Committee, 2006-2007  
Staff/Volunteer Workgroup, 2007-2009

### **Published articles in refereed scientific journals:**

- Loynachan, T. E., W. V. Bartholomew, and A. G. Wollum. 1976. Nitrogen transformations during aeration of swine-manure slurries. *J. Environ. Qual.* 5:293-297.
- Loynachan, T. E. 1978. Low-temperature mineralization of crude oil in soil. *J. Environ. Qual.* 7:494-500.
- Mitchell, W. W., T. E. Loynachan, and J. D. McKendrick. 1979. Effects of tillage and fertilization on persistence of crude oil contamination in an Alaskan soil. *J. Environ. Qual.* 8:525-532.
- Loynachan, T. E. 1981. Lime requirement methods for cold-region soils. *Soil Sci. Soc. Am. J.* 45:75-80.
- Michaelson, G. J., T. E. Loynachan, F. J. Wooding, and G. A. Mitchell. 1982. Effects of N, P, and K fertilization on barley grown on a newly cleared subarctic soil. *Agron. J.* 74:694-699.
- Al-Rashidi, R. K., T. E. Loynachan, and L. R. Frederick. 1982. Desiccation tolerance of four strains of Rhizobium japonicum. *Soil Biol. and Biochem.* 14:489-493.
- Gomes, S. L., and T. E. Loynachan. 1984. Nitrification of anhydrous ammonia related to nitrapyrin and time-temperature interactions. *Agron. J.* 76:9-13.
- Michaelson, G. J., T. E. Loynachan, and F. J. Wooding. 1984. Establishment, dry matter yield, and crude protein of fertilized smooth bromegrass on a cleared Alaskan soil. *Agron. J.* 76:569-572.
- Hadad, M. A., and T. E. Loynachan. 1985. Abundance and characterization of cowpea miscellany Rhizobium from Sudanese soils. *Soil Biol. and Biochem.* 17:717-721.
- Hadad, M. A., T. E. Loynachan, M. M. Musa, and N. O. Mukhtar. 1986. Inoculation of groundnut (peanuts) in Sudan. *Soil Sci.* 141:155-162.
- Hadad, M. A., and T. E. Loynachan. 1986. Groundnut nitrogen fixation by three serologically and morphologically distinct rhizobia. *Soil Biol. and Biochem.* 18:161-166.
- Loynachan, T. E. 1986. Use of vericolor 5072 film for reversed-text transparencies. *J.*



of Agron. Ed. 15:43-46.

- Bowman, R. A., T. E. Loynachan, and J. W. Schafer. 1986. Attitudes of agronomy teachers on preparation for teaching. J. of Agron. Ed. 15:96-100.
- Hickey, W. J., T. E. Loynachan, A. Ayanaba, and R. M. Zablutowicz. 1987. Diversity within Iowa Bradyrhizobium japonicum serogroup 123. Soil Sci. Soc. Amer. J. 51:941-946.
- Hicks, P. M., and T. E. Loynachan. 1987. Phosphorus fertilization reduces vesicular-arbuscular mycorrhizal infection and changes nodule occupancy of field-grown soybean. Agron. J. 79: 841-844.
- Berg, R. K. Jr., T. E. Loynachan, R. M. Zablutowicz, and M. T. Lieberman. 1988. Nodule occupancy by introduced Bradyrhizobium japonicum in Iowa soils. Agron. J. 80:876-881.
- Loynachan, T. E. 1988. Diagnostic examination for students entering graduate study in soil science. J. of Agron. Ed. 17:109-112.
- Barbarick, K. A., W. A. Anderson, D. R. Hicks, N. W. Hopper, G. Joliff, T. E. Loynachan, and D. F. Post. 1988. Survey results evaluating the Journal of Agronomic Education. J. of Agron. Ed. 17:63-68.
- Hicks, P. M., and T. E. Loynachan. 1989. Bacteria of the soybean rhizosphere and their effect on the growth of Bradyrhizobium japonicum. Soil Biol. and Biochem. 21:561-566.
- Ali, F. S., and T. E. Loynachan. 1990. Inhibition of Bradyrhizobium japonicum by diffusates from soybean seed. Soil Biol. and Biochem. 22:973-976.
- Manjanatha, M. G., T. E. Loynachan, and A. G. Atherly. 1992. Tn<sub>5</sub> mutagenesis of Chinese Rhizobium fredii for siderophore overproduction. Soil Biol. and Biochem. 24:151-155.
- Manjanatha, M. G., T. E. Loynachan, and A. G. Atherly. 1992. Efficiency, competitiveness, and persistency of Chinese Rhizobium fredii in Iowa soils. Agron. J. 84:676-681.
- Khalil, S., T. E. Loynachan, and H. S. McNabb, Jr. 1992. VAM fungal colonization of soybean and spore populations in Iowa soils. Agron. J. 84:832-836.
- Khalil, S., and T. E. Loynachan. 1994. Soil drainage and distribution of VAM fungi in two toposequences. Soil Biol. and Biochem. 26:929-934.
- Khalil, S., T. E. Loynachan, and M. A. Tabatabai. 1994. Mycorrhizal dependency and nutrient uptake by improved and unimproved corn and soybean cultivars. Agron. J. 86:949-958.
- Khalil, S., L. Carpenter-Boggs, and T. E. Loynachan. 1994. Procedure for rapid recovery of VAM spores from soil. Soil Biol. and Biochem. 26:1587-1588.
- Carpenter-Boggs, L., T. E. Loynachan, and P. D. Stahl. 1995. Spore germination of *Gigaspora margarita* stimulated by volatiles of soil-isolated actinomycetes. Soil Biol. and Biochem. 27:1445-1451.

- Haack, B. J., R. E. Andrews, and T. E. Loynachan. 1996. Tn916-mediated genetic exchange in soil. *Soil Biol. and Biochem.* 28:765-771.
- Ali, F. S., T. E. Loynachan, A. M. M. Hammad, and Y. Aharchi. 1998. Polyvirulent rhizobiophage from a soybean rhizosphere soil. *Soil Biol. and Biochem.* 30:2171-2175.
- Loynachan, T. E. 1998. Soil life by digitized video for the Internet. *J. Nat. Res Life Sci. Ed.* 27:107-109.
- Khalil, S., T. E. Loynachan, and M. A. Tabatabai. 1999. Plant determinants of mycorrhizal dependency in soybean. *Agron. J.* 91:135-141.
- Troeh, Z. I., and T. E. Loynachan. 2003. Endomycorrhizal fungal survival in continuous corn, soybean, and fallow. *Agron. J.* 95:224-230.
- Ishii, S., and T. E. Loynachan. 2004. Rapid and reliable DNA extraction techniques from trypan-blue-stained mycorrhizal roots: comparison of two methods. *Mycorrhiza* 14:271-275.
- Loynachan, T. E. 2006. Quick, easy method to show living soil organisms to high school or beginning-level college students. *J. Nat. Res Life Sci. Ed.* 35:202-208.
- Kim, D.-G., T. M. Isenhardt, T. B. Parkin, R. C. Schultz, T. E. Loynachan, and J. W. Raich. 2009. Nitrous oxide emissions from riparian forest buffers, warm-season and cool-season grass filters, and crop fields. *Biogeosciences Discuss.* 6:607-650.
- Kim, D.-G., T. M. Isenhardt, T. B. Parkin, R. C. Schultz, and T. E. Loynachan. 2009. Nitrate and dissolved nitrous oxide in groundwater within cropped fields and riparian buffers. *Biogeosciences Discuss.* 6:651-685.
- Troeh, Z. I., and T. E. Loynachan. 2009. Diversity of arbuscular mycorrhizal fungal species in soils of cultivated soybean fields. *Agron. J.* 101:1453-1462.
- Kim, D.-G., T. M. Isenhardt, T. B. Parkin, R. C. Schultz, and T. E. Loynachan. 2010. Methane flux in cropland and adjacent riparian buffers with different vegetation covers. *J. Environ. Qual.* 39:97-105.
- Zhang J., T. E. Loynachan, and J. W. Raich. 2011. Artificial soils to assess temperature sensitivity of the decomposition of model organic compounds: effects of chemical recalcitrance and clay-mineral composition. *Eur. J Soil Science* 62:863-873.
- Brewer, C. E., Y. Hu, K. Schmidt-Rohr, T. E. Loynachan, D. A. Laird, and R. C. Brown. 2012. Extent of pyrolysis impacts on fast pyrolysis biochar properties. *J. Environ. Qual.* 41:1115-1122.
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