

**Robert L. Westerman**  
Assistant Vice President for Agricultural Programs  
Division of Agricultural Sciences and Natural Resources  
Oklahoma Agricultural Experiment Station  
Oklahoma State University  
Stillwater, OK 74078

**OFFICE:**

102 Ag Hall  
Tel: (405) 744-2474  
FAX: (405) 744-2480  
E-mail: Robert.L.Westerman@okstate.edu

**Home:**

45 Yellow Brick Road  
Stillwater, OK 74074  
Tel: (405) 377-8069

**EDUCATION:**

Ph.D. Soil Fertility-Chemistry, Agronomy Department,  
University of Illinois, 1969  
M.S. Soils, Agronomy Department, Oklahoma State  
University, 1963  
B.S. Agricultural Education, Oklahoma State University, 1961

**PROFESSIONAL EXPERIENCE:**

Division of Agricultural Sciences and Natural Resources

2007 to present Assistant Vice President for Agricultural Programs  
2006 -2007 Assistant Vice President for Agricultural Programs and Interim Sr. Financial Officer  
2006 Assistant Vice President for Agricultural Programs

Oklahoma Agricultural Experiment Station

2005 – 2006 Interim Associate Director  
2001 – 2005 Assistant Director

Department of Plant and Soil Sciences, Oklahoma State University

1997 - 2001 Professor and Head

Department of Agronomy, Oklahoma State University

1992-1997 Professor and Head  
1991-1992 Regents Professor and Head  
1988-1991 Regents Professor of Soil Fertility and Plant Nutrition  
1983-1988 Professor of Soil Fertility and Plant Nutrition  
1976-1983 Associate Professor of Soil Fertility and Plant Nutrition

Department of Soil, Water and Engineering, University of Arizona

1974-1976 Associate Professor and Associate Soil Scientist  
1972-1974 Assistant Professor and Assistant Soil Scientist

Department of Agricultural Chemistry and Soils, University of Arizona

1969-1972 Assistant Professor and Assistant Soil Scientist

Department of Agronomy, University of Illinois

1966-1969 Graduate Research Assistant, Soil Fertility and Chemistry

United States Army

1963-1966 Platoon Leader, Helicopter Unit

Department of Agronomy, Oklahoma State University

1961-1963 Graduate Research Assistant, Soil Fertility

## NATIONAL AWARDS:

1991	Agronomic Achievement Award - Soils; American Society of Agronomy
1986	Fellow - Soil Science Society of America
1986	Fellow - American Society of Agronomy

## DEMONSTRATED ADMINISTRATIVE SKILLS AND LEADERSHIP ACTIVITIES:

### Division of Agricultural Sciences and Natural Resources

July 2006 to present

- Chief Counsel to Vice President to assist in analyzing, planning, formulating, implementing, monitoring, evaluating, and revising Division activities and functions
- Provide day-to-day support, background, and input on Division-level programs
- Managed the Division business affairs while serving as Interim Sr. Financial Officer
- Developed and implemented the staff block salary program
- Provided leadership in the development of the Battelle Report for the Division
- Assist the Vice President, Dean, and Director with a broad and complex set of assignments related to the duties of the Vice President, Dean, and Director
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### Oklahoma Agricultural Experiment Station Responsibilities and Accomplishments:

July 2005 to 2006 – Interim Associate Director

- Provided primary leadership as Interim Associate Director of the Oklahoma Agriculture Experiment Station (OAES) for statewide programs.
- Allocate human and fiscal resources to units to accomplish our mission.
- Worked to increase efficiency, research capacity to include graduate research assistantships, team research and extension initiatives, accountability, and outcome assessments of OAES funds and build research infrastructure.
- Deeply involved in the replacement of new faculty and staff positions into high priority research programs which is part of the University's restore, reward, and grow program. We have approved 19 faculty and about 25 staff positions with approximately 55% of the funds directed to OAES.
- Nearing completion of the new \$4 M Swine Research and Teaching facility.
- Initiated construction of the \$2 M addition to the Noble Research Center for BSLP-2 and BSLP-3 laboratories and Controlled Environmental Growth Chamber facilities.
- Plans have been designed for a new \$750,000 research greenhouse on Ridge Road with construction starting next year.
- Worked cooperatively with OCES to launch a \$1.3 M "Team Initiative Program" (TIP) designed to increase team work and collaboration to meet stakeholder needs in Oklahoma to promote outcome-oriented, issue-based research and extension programs in high priority areas identified by DASNR; enhance our ability to compete for external funding; increase research capacity; promote multi-disciplinary and integrated research and extension programs from the state level to the county educator; and increase the visibility of OAES and OCES initiative teams.
- A "Research Infrastructure Program" (RIP) has also been launched to improve on-campus infrastructure. This is a \$1 M dollar program to update research laboratories, instrumentation, and equipment to increase OAES research capacity and to make our scientists more competitive for extramural funding.
- Launched a \$1 M dollar "Station Infrastructure Program" (SIP) to improve facilities on out-lying research stations and units.
- Rapid escalating fuel, natural gas and electricity, fertilizer, and equipment costs and the need to make significant improvements in research infrastructure in many OAES facilities prompted the need for realignment of field research experiment stations and other OAES research facilities into a new Field and Research Service Unit. For the first time in the history of OAES, we will be able to manage the field stations and other research facilities as a unit and budget appropriately.
- Provided advice and counsel to the Vice President, Dean and Director regarding agricultural research and other administrative matters.
- Member of the Board of Directors for the Sun Grant Association, a 501© non-profit corporation whose mission is to develop biobased products for energy, materials, and industrial applications.
- Member of the SAAESD Strategic Planning Committee and ESCOP leadership team.
- Member of the National Agricultural Biotechnology Council.
- Participant in the University and Industry Consortium
- Principal Investigator for the National Institute for Agricultural Security.
- Co-host with University of Arkansas and Texas A&M University to sponsor a "Grant Writing Workshop" in this region.

- Serving as a member of the Search and Screen Committee for the Associate Director of the Oklahoma Cooperative Extension Service.
- Liaison with USDA/ARS Research Leaders in the state and the Southwest Region and other federal agencies.
- Represented OAES on the University Research Council.
- Cooperate with Oklahoma Department of Agriculture, Food, and Forestry and other state agencies.
- Provide leadership for full compliance with affirmative action and equal employment opportunities.

#### January 2001 – July 2005 – Assistant Director

- Co-leader with the Associate Director for the management of the OAES system.
- Provided oversight for research on campus, at facilities in the Stillwater area, and at 16 locations throughout Oklahoma.
- Research faculty are located in nine departments within the Division of Agricultural Sciences and Natural resources, and three other colleges; the College of Veterinary Medicine, the College of Human Environmental Sciences, and the College of Arts and Sciences.
- Advice and counsel was provided to the Dean on matters relating to agricultural research.
- Responsible for the oversight of Federal and State appropriated funds and for extramural grant and contract management.
- Total expenditures in 2005 exceeded \$50 million.
- Participated in all faculty and administrative evaluations.
- Developed and implemented goals and objectives of the OAES to ensure program excellence and to service the broad agricultural sector in the state as well as to ensure financial growth and support for agricultural research.
- Promoted the “Team Approach” in all agricultural activities and supported interdisciplinary multi-agency and multi-institutional agricultural collaboration.
- Interacted with state leaders, foundations, federal agencies, commodity groups and other key constituencies to assist in achieving the goals and objectives of OAES.
- Represented OAES on state, regional, and national committees.
- Worked cooperatively with Associate and Assistant Directors of the Oklahoma Cooperative Extension Service (OCES) and the College of Agricultural Sciences and Natural Resources (CASNR) to achieve goals and objectives of the Division of Agricultural Sciences and Natural Resources (DASNR) and to address emerging issues important to the state of Oklahoma.
- Responsible for intellectual property management for the OAES which has led to the licensing of intellectual property to develop new industries and companies in Oklahoma, one of which was a seed propagated variety of bermudagrass.
- Successful in negotiating five licensing agreements for high quality vegetatively propagated turf bermudagrasses, one long-term licensing agreement for pepper, a commercialization agreement with BASF for Clearfield Wheat, and the formation of a marketing association for new variety releases of high quality winter wheat.
- Led the efforts to establish an agreement between the Kansas Agricultural Experiment Station and Cooperative Extension and the OAES to fund and share a joint position to address Canola breeding and management in each state. This is the first joint multi-state position that OAES has participated in. The Oklahoma Cooperative Extension Service (OCES) shared in support of support personnel and extension programming.
- Worked with Associate Directors of Research from other colleges within the university and with the Vice-President of Research to achieve the goals and objectives of Oklahoma State University.
- Serve as Administrative Advisor representing the Directors of the Southern Agricultural Experiment Stations for SERA-IGA-6 “Methodology, Interpretation, and Implementation of Soil, Plant, Byproducts, and Water Analyses”, S-309 “Development of Genetic Resources for Cotton”, SDC-317 “New Genetic Resources Committee for Cotton”, and NRSP-6 “Inter-Regional Potato Introduction Project Acquisition, Classification, Preservation, Evaluation and Distribution of Potato (Solanum) Germplasm.

#### Departmental Leadership Responsibilities and Accomplishments:

##### 1991 – 2001 – Department Head

- Provided leadership for research, extension, and teaching programs in a complex department with multiple disciplines to include plant breeding and genetics, crop management, soil science, weed science, rangeland ecology, and plant biology.
- Worked closely with the faculty and administration to bring about significant changes in the directions of programs via the development and implementation of a Department Strategic Unit Plan. Priorities were set for viable programs. Major changes and redirection of some traditional programs occurred. Many proactive faculty worked with me to improve their effectiveness.

- The Alfalfa Breeding Program was broadened to encompass management and the position assumed 50% extension responsibilities as a State Specialist for Alfalfa.
- Responsibilities of the Director of the Soil, Plant and Water Analysis Laboratory were broadened to include 50% State Specialist responsibility for nutrient management of wastes.
- Cotton Breeding Program was redirected to focus mainly on crop management.
- Initiated a Hard White Winter Breeding Program.
- Faculty teaching assignments were adjusted and new courses were implemented to satisfy student and departmental needs.
- The Agronomy Experiment Station at El Reno was closed and personnel reassigned to main station in Stillwater.
- The Sandyland Experiment Station at Mangum was leased for a five-year period then was entered into the Conservation Reserve Program.
- The Southwest Research and Extension Center (SWREC) and the Oklahoma Panhandle Research and Extension Center (OPREC) were established and Directors named.
- A Memorandum of Understanding (MOU) that defines responsibilities of OPSU and OSU was initiated. Visibility of OSU, DASNR, OAES, and OCES was significantly enhanced resulting in strong clientele support in the panhandle region for our programs.
- Teaching, research, and extension programs in the Department became more highly focused enabling faculty to work within the constraints of their budgets.
- Teaching programs were constantly evaluated to ensure that our students were getting a quality education.
- High priority positions for the department were identified annually, based on input from the faculty.
- The following positions were filled: Soil Chemistry 1991; Soil Fertility and Plant Nutrition 1991; Extension Cotton Specialist 1991; Soils Teaching 1992; Extension Forage/Teaching 1994; Director of Soil, Water and Forage Analysis Laboratory and Extension Waste Management Specialist - 1996; Soil and Crop Management Systems - 1997; Range Scientist 1997; Soil Microbiologist 1998; Crop Science Teaching 1999; Oilseed Chemist 1999; and a Molecular Genetics and Breeding Position with emphasis on Wheat 1999. A Director for the Southwest Research and Extension Center was appointed in 1994 and a Director for the Oklahoma Panhandle Research and Extension Center was appointed in 1994, refilled in 1997 and in 2000. A peanut breeding position was filled in 2000. Other high priority positions that were identified and filled after 2001 were an Extension Weed Scientist, and Coordinator of Field Operations. Numerous other support positions for the department were filled. In essence, the Unit Plan was implemented and was modified as new needs were identified and discussed in annual management sessions.
- The CSREES Review of the department in 1996 was successful and provided the background for our planning and implementation process.
- Based on faculty input, the Department of Agronomy was renamed to the Department of Plant and Soil Sciences in September 1997.
- The Master of Science of Agronomy was changed to Master of Science in Plant and Soil Sciences June 18, 1998. These changes better described the broad diversity in the department, which contained strong teaching, research and extension programs in the basic disciplines of Plant Breeding and Genetics, Biotechnology and Physiology, Crop Production, Range Science, Weed Science, and Soil Science.
- Departmental strength in research, extension, and teaching was gained due to the enhanced visibility of our programs.
- Undergraduate major enrollment in the fall of 1999 in the Department increased 17% and 6%, respectively, over the recorded enrollment numbers in 1997 and 1998 for a total of 88.
- Increases were observed in all options except crop science. The number of undergraduate students continued to grow to near 100 in the next few years. Enrollment numbers did not include majors in the Environmental Science program that were being advised and directed by our faculty. Greater than 40% of the 80 students in the Environmental Science program were serviced and advised by three faculty members in our Department.
- The increase in enrollment in majors was attributed to the name change from "Agronomy" to the "Plant and Soil Sciences Department" which provided greater visibility of our programs. The dedicated work of the Teaching Coordinator and many other faculty members that worked diligently to improve the quality of our teaching programs was greatly appreciated.
- Graduate student enrollment also increased 58% from the recorded enrollment in 1997 and was 13% above the 1998 enrollment number for a total of 67 graduate students. Growth continued to approximately 75 graduate students in the fall semester of 2000. These numbers did not include Environmental Science and Plant Science graduate students that were advised by our faculty. The increase in graduate student enrollment also reflected greater visibility of our programs, which was brought about by the name change of the department.
- A challenge was issued to the faculty in the fall of 1999 to increase the enrollment for undergraduate and graduate students to 100 and 75, respectively, by the fall semester of 2000. By the end of the fall semester in 2000 we were well on our way toward meeting this lofty goal.

- Evaluated the administrative structure of Oklahoma Pedigree Seed Services and established a new Memorandum of Understanding with Oklahoma Crop Improvement Association and Oklahoma Foundation Seed Stocks.
- Initiated a Memorandum of Understanding with Oklahoma Panhandle State University that allowed the expansion of agronomic research and extension and the establishment of the Oklahoma Panhandle Research and Extension Center (OPREC).
- Completed the main OPREC building that included offices, laboratories, and a conference room in 1998.
- Added two state-of-the-art lateral move LEPA irrigation systems to OPREC as well as new underground irrigation lines, tractors, combine, and a grain cart.
- Completed the construction of building complex for the Southwest Research and Extension Center (SWREC) in Altus.
- Acquired \$1.55 M in funding to establish four endowed distinguished professorships (\$250,000 each); The P. E. Harrill Distinguished Professor of Crop Science, The Warth Distinguished Professor in Agronomy, The Santelmann/Warth Distinguished Professor in Agronomy, The Mel D. and Mary E. Jones Distinguished Professor of Agronomic Sciences; and a Presidential Student Scholarship (\$50,000). Selection of the candidate for the Endowed Distinguished Wheat Genetics Chair (\$0.5 M) was completed.
- Many faculty and staff in the Department of Plant and Soil Sciences were recognized for their meritorious achievements at local, regional, and national levels. Two faculty members were appointed to Regents Professor during my last year as Department Head to bring the total to three Regents Professors in the department.
- Outstanding undergraduate students, Agronomy Club recognition at the national level, outstanding graduate student accomplishments, recognition of faculty as "Fellows" and "Outstanding Young Scientists," were only a few examples of our many accomplishments.
- As Department Head, I was extremely pleased to have been in a position to help create a healthy environment to allow faculty to be productive and gain national recognition for their work.
- Other Department Head duties included participation and leadership roles in the Great Plains Agricultural Council, namely as Chairman of the Crops and Soils Committee, Secretary and member of the Southern Region Administrators Council, consisting of Agronomy Department Heads in the Southern Region, University Advisor to Farmland Industries, and member of Board of Directors for the Foundation of Agronomic Research.
- Served as Chairman of the Great Plains Agronomy Department Heads Committee and hosted the group in Stillwater, OK.
- Served as Extension Representative of the American Society of Agronomy sponsored state program for Certified Crop Advisors.
- Received an appreciation plaque for my work with the American Society of Agronomy sponsored Certified Crop Advisor program in the state.
- Received a recognition certificate for my leadership role while serving on the Board of Directors for the Foundation for Agronomic Research.
- Received a distinguished service award from the Agronomy Club in the Plant and Sciences Department. The Agronomy Club was the first place team in American Society of Agronomy 10 consecutive years under my leadership.

#### Faculty Responsibilities and Accomplishments:

1969 -1991

- Primary responsibilities in research and teaching for 22 years before entering into administration in 1991.
- Chairman and member of the personnel committee, chairman and member of faculty advisor committee, chairman of the soils committee, chairman and member of numerous search and screen committees, vehicle use committee, space committee, field day activities committee, fund raising activity committee, and as Research Coordinator for the department.
- My appointment as a faculty member at the University of Arizona was approximately 75% research and 25% teaching. While at the University of Arizona, I taught both undergraduate and graduate level courses.
- My appointment at Oklahoma State University as a faculty member was mainly research (90%) and teaching (10%). Primary teaching responsibilities included graduate instruction and advisement.
- Directed Soil Fertility Research Programs at two major universities and served as major advisor for 40 graduate students as well as serving on graduate committees of numerous other students.
- Soil Fertility Research Experiments have been conducted at most all of the Oklahoma Agriculture Experiment Stations and on numerous farmer-cooperator locations in Oklahoma.
- Crop and forage soil fertility experiments have included winter wheat, grain sorghum, cotton, soybeans, peanuts, guar, mungbeans, alfalfa, clover, fescue and bermudagrass.
- Refereed journal articles have been published with most crops.
- Invited speaker and have discussed various aspects of my research at local, state, regional and national meetings.

- Worked closely with industry and have received numerous grants (Phillips Chemical, Dow Chemical, Olin, PPI, FAR, NFSA, FFF, Allied Chemical, Celpril Industries, Eagle Picher Industries, TVA, Oklahoma Wheat Research Foundation, Oklahoma Wheat Commission, Peanut Commission, Soybean Association, and others) to help support my research program.
- Outside grant funds ranged from \$75,000 to \$100,000 per year.
- \$240,000 annually to the Soil Fertility Research and Education program. This funding has continued and has totaled more than \$3.6 M in the last 15 years.
- Successful in acquiring a competitive grant totaling \$300,000 from the OCAST program in support of our soil fertility research program. This was one of first OCAST grants to receive maximum funding in the Division of Agricultural Sciences and Natural Resources.
- Working with our state and federal legislators and other support clientele in the state, we were successful in acquiring a special USDA/ARS Federal Initiative Grant of \$250,000 to investigate animal waste management principles and practices in semiarid ecosystems. This funding has been continuous and has exceeded \$2.0 M in the past eight years.
- Active publication record consisting of journal articles, bulletins, research progress reports and other popular articles as well as written invitational chapters in books and ASA monographs totaling more than 110 publications.
- Served as editor of the Soil Science Society of America Monograph "Soil Testing and Plant Analysis," which was published in 1990. This book has served as the standard for the Soil Science Society of America for the past 15 years.
- Served six years as an Associate Editor for the Agronomy Journal, six years as Associate Editor for Fertilizer Issues published by the Fluid Fertilizer Foundation and as a member of the Board of Directors for the Soil Science Society of America.
- Elected chairman of Division S-4 Soil Fertility and Plant Nutrition in the American Society of Agronomy and subsequently nominated for President of the Soil Science Society of America and for the American Society of Agronomy.
- Reviewed numerous manuscripts for the Soil Science Society of America Journal, Agronomy Journal, Soil Science, Fertilizer Issues and Journal of Plant Nutrition.
- Received "Fellow" Awards in the American Society of Agronomy which is only awarded to less than 0.1% of the total membership annually.
- Received "Fellow" in the Soil Science Society of America which is only awarded to less than 0.1 % of the total membership annually.
- Received the "Achievement Award - Soils" from the American Society of Agronomy which is only awarded to one person in the society annually.
- Appointed Regents Professor and held that title until I entered into a full time administration position.
- Many former students now occupy important management positions with agricultural consultant firms and industry, or as faculty members at other universities. Three of my students (one MS., 1983; and two Ph.D., 1985 and 1988) have won national recognition for their research work and have been awarded Potash and Phosphorus Institute Fellowships. One of these same students earned the "Outstanding Young Scientist Award" at American Forage and Grassland Council Meetings in 1984. In 1987, the "Outstanding Ph.D. Graduate Student in Agronomy" was selected from my Soil Fertility Research Program. One Ph.D. student has been awarded an Oklahoma Water Resources Research Institute Fellowship and has received an American Water Foundation Research Award for work dealing with nitrate pollution of groundwater. Currently, two former students are serving as Department Heads, one at the Southwest Florida Research and Education Center, University of Florida, Immokalee; and one at the Department of Soil and Water Sciences, University of Arizona, Tucson. A third former student is serving as Dean of the College of Agriculture and Director of the Montana State Experiment Station.

#### **TEACHING EXPERIENCE:**

1969 – 2001

- Teaching experience has included both graduate and undergraduate courses.
- Graduate level courses include "Soil-Plant Relationships", "Soil Organic Matter", "Management of Arid Lands and Salt-Affected Soils" and Graduate Seminar.
- Undergraduate instruction has consisted of "Fundamental Principles of Soil Science", Soil Fertility and Ecological Relationships for Food Production", and "Senior Seminar".

#### **EXTENSION EXPERIENCE:**

1969 - 2005

- Extension activities have included presentations at field days, clinics, workshops, training sessions, agricultural business conferences, agricultural associations, and serving as extension representative for the State Certified Crop Advisory Program sponsored by the American Society of Agronomy.
- Provided leadership and supervision as Department Head for the extension programs of 9.5 FTE's.

- Worked cooperatively with OCES leadership to promote extension programs and enhance working relationships with research personnel.

## **RESEARCH EXPERIENCE:**

1969 - 1991

### Soil Fertility

- Research included all phases of fertilizer use and soil fertility effects on major crops grown in Oklahoma. Major emphasis was on wheat, cotton, grain sorghum, peanuts, soybeans, alfalfa, arrowleaf clover and bermudagrass.
- <sup>15</sup>N, a heavy isotope, was utilized in laboratory, green-house and field research to investigate factors affecting the efficiency of fertilizer use, movement and transformations of N in soil, uptake and utilization in plants and potential for pollution of groundwater, lakes, and streams.

### Soil Management

- Tillage, cropping, and conservation production systems and the effect of long term experiments on soil quality and nutrient accumulations have been investigated.

### Plant Nutrition

- The effects of essential fertilizer elements on plant growth, nutrition, moisture stress, and crop quality were investigated.

## **SELECTED PUBLICATIONS:**

### **Thesis and Dissertation**

Westerman, R.L. 1963. Evaluation of diagnostic techniques for determining available soil phosphorus. M.S. Thesis, Oklahoma State University, 41 p.

Westerman, R.L. 1969. Recovery of <sup>15</sup>N-labeled fertilizers in field studies. Ph.D. Thesis, Univ. of Illinois, Urbana, 206 p., Univ. Microfilms, Ann Arbor, Michigan (Diss. Abstr. No. 70-13536).

### **Journal Articles**

Williford, M.W., T.C. Tucker, R.L. Westerman, and D.R. Cardon. 1969. The movement of nitrogen fertilizers through soil columns. In Collected Papers Regarding Nitrates in Agriculture Waste Water. Water Pollution Control Research Series (WPCRS) 13030 ELY, U.S. Government Printing Office, Washington, D.C., pp. 29-39.

Bohn, H., and R.L. Westerman. 1971. Sulfuric acid: It's potential for improving irrigation water quality. In Hydrology and Water Resources of Arizona and the Southwest. 1:43-52.

Westerman, R.L., L.T. Kurtz, and R.D. Hauck. 1972. Recovery of <sup>15</sup>N-labeled fertilizers in field experiments. Soil Sci. Soc. Amer. Proc. 36:82-86.

Westerman, R.L., and L.T. Kurtz. 1972. Residual effects of <sup>15</sup>N-labeled fertilizers in a field experiment. Soil Sci. Soc. Amer. Proc. 36:91-94.

Westerman, R.L., and L.T. Kurtz. 1973. "Priming Effect" of <sup>15</sup>N-labeled fertilizers on soil nitrogen in field experiments. Soil Sci. Soc. Amer. Proc. 37:725-727.

Westerman, R.L., and L.T. Kurtz. 1974. Isotopic and non-isotopic estimation of fertilizer nitrogen uptake by sudangrass in field experiments. Soil Sci. Soc. Amer. Proc. 38:107-109.

Westerman, R.L., and T.C. Tucker. 1974. Effect of salts and salts plus nitrogen-15-labeled ammonium chloride on mineralization of soil nitrogen, nitrification, and immobilization. Soil Sci. Soc. Amer. Proc. 38:602-605.

Westerman, R.L., and T.C. Tucker. 1978. Factors affecting denitrification in a Sonoran Desert soil. Soil Sci. Soc. Amer. J. 42:596-599.

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Pereira, J.R., and R.L. Westerman. 1979. Substituicao de potassio por sodio na nutricao de alface (*Lactuca sativa* L.). Separata de Turrialba 28:239-244.

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- Westerman, R.L. 1981. Factors affecting soil acidity. *Solutions* 25(2):64-81.
- Datin, C.L., and R.L. Westerman. 1982. Effect of phosphorus and iron on grain sorghum. *J. of Plant Nut.* 5(4-7):703-714.
- Westerman, R.L., R.J. O'Hanlon, G.L. Fox, and D.L. Minter. 1983. Nitrogen fertilizer efficiency in bermudagrass production. *Soil Sci. Soc. Am. J.* 47:810-817.
- Westerman, R.L. 1984. Effect of phosphorus and potassium on yield and quality of arrowleaf clover. *Am. Forage and Grassland Proc.* p. 312-314.
- Stein, J.D., and R.L. Westerman. 1984. Subsurface and broadcast phosphorus effects on yield and chemical composition of established alfalfa. *Am. Forage and Grassland Proc.* p. 88-92.
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- Westerman, R.L., and M.G. Edlund. 1985. Deep placement effects of N and P on grain yield, nutrient uptake and forage quality of winter wheat. *Agron. J.* 77:803-809.
- Shaw, D.R., T.F. Peeper, and R.L. Westerman. 1986. Persistence of phytotoxicity of metribuzin and its ethylthio analog. *Weed Sci.* 34:409-412.
- Al-Showk, A.M., R.L. Westerman, and D.L. Weeks. 1986. Iron chlorosis in soybeans. *J. of Plant Nut., Vol.* 9(3-7):355-371.
- Westerman, R.L., C.E. Woods, Jr., and R. Hurst. 1986. Response of winter wheat to surface strip applications of ammonium polyphosphate. *J. of Fert. Issues, Vol.* 3(1):7-11.
- Westerman R.L., and W.E. McMurphy. 1986. Nitrogen boosts forage/animal gains. *Solutions* 30(3):49, 53-54.
- Jacobsen, J.S., R.L. Westerman, and P.L. Claypool. 1986. Distribution of anhydrous ammonia in soil and germination hazard to winter wheat. *Soil Sci. Soc. Am. J.* 50:1606-1613.
- Al-Showk, A.M., R.L. Westerman, and D.L. Weeks. 1987. Influence of P sources and rates on soil pH, extractable P and DOPA micronutrient. *Soil Sci.* 144:36-42.
- Barreto, H.J., and R.L. Westerman. 1987. YIELDFIT - A microcomputer program for determining maximum economic fertilization rates using Mitscherlich, quadratic, and square root functions. *J. Agron. Educ.* 16:11-14.
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