Title:
ENVIRONMENTALLY SOUND HIGH IMPACT FORAGE MANAGEMENT RESEARCH BASED DEMONSTRATIONS FOR INCREASED LIVESTOCK PROFITABILITY BY INCREASING FORAGE PRODUCTION AND QUALITY

Investigator(s):
Todd Lorenz, Rich Hoormann, Wendy Flatt, Gene Schmitz, Joni Ross, Randa Doty and Rob Kallenbach

Objectives, including relevance of project to Missouri fertilizer/lime use:
Livestock producers and landowners read about basic forage plant, soil fertility, and animal management techniques that can improve pasture eco-systems, carrying capacity and ultimately farm profitability. However, many are not responsive to adopting these current forage management techniques. Many producers have not had access to research plots that demonstrate the short term and long term plant responses to fertility management changes. This project combines multiple demonstrations of University of Missouri research based forage fertility management practices on a strategically selected farmer field location that allows producers to follow changes in pasture eco-system and profitability per acre through on-site demonstrations and field days.

While we have had great turnout for our educational workshops and have established a following in our first year, the statewide phenomenon “Easter” freeze of 2007 provided setbacks in forage production and limited legume overseeding establishment. The first objective of this proposal is to extend the original proposal an additional year while providing for a concurrent 2 year study on Ag lime and waste lime products.

A by-product of the quarry processing comes under various names such as tailings, screenings, waste lime and other terms. In theory the by-product lime would be available for neutralizing qualities but over a greatly extended period of time. Some isolated quarries are providing waste lime at reduced rates and imply that the quality is similar to Ag Lime. While producers may be purchasing a cheaper product per/ton, the short term effect of the lime material may not even satisfy forage nutritional needs enough to offset the initial cost to apply. Several producers in the state have been led astray by not understanding how to evaluate lime. The objective of this concurrent 2 year proposal is to gather data on the rate of pH change over time and educate producers about the differences in these products effectiveness within an economically acceptable time frame and to demonstrate those differences both visually and in harvested field trials. Because this location is already established, we are able to increase the overall impact of this proposal with minimal dollar requests.

Of the nearly 10,000 forage field soil samples submitted to the University of Missouri Soil Testing Laboratory in 2005, only 37% fell within the optimal pH range. Other nutrients (such as P, K, Ca and Mg) were listed in the very low to medium range 50% to 70% of the time depending on nutrient.
Our intent with this proposal is not only to continue the successful educational opportunities from our previous proposal but to expand the project with lime comparisons.

Procedures:
A low management pasture with high visibility was selected for the demonstration site in 2007. The original forage experiment is a replicated split plot design with lime and no lime on the main plots and treatments to include a control check, soil test recommended fertility, a typical retailer recommended pasture fertility package, 30 lbs P only, and 50 lbs N only. The affects of the “Easter” freeze of 2007 has given us concern about the total yield potential and has reduced our legume stand in our establishment year. The legume portion of the plot area will be over-seeded with legumes again for 2008 in order to simulate ergovaline dilution recommended practices. In addition to improving data quality in our first study, extending this study an additional year will allow us to add this supplemental experiment that will include treatments with Ag lime and various available waste lime products. Generating data by tracking soil pH and plant response (yield and plant composition) of applications of waste lime over time is critical to demonstrating the profitability of applying certified Ag lime materials.

Plots will be harvested three times annually to follow annual forage response to management changes and long term economic impact from increased productivity and quality. Forage analysis will be conducted on each of the treatments during each of the harvest to show forage quality variations in a year round forage production system. Statistical analysis of data collected will be performed and compared to other research areas. Field days will be conducted twice annually for the duration of the grant to provide demonstrations of proven research based concepts. These concepts will include but not be limited to: soil testing, liming, fertilizer materials, fertilization timing, grazing heights, extended grazing using legumes, grazing frequency, environmental quality and economic benefit of implementing these practices.

Current status/importance of research area:
Soil fertility and forages are very integral to ruminant livestock operations. Without sufficient soil fertility, forages cannot grow to their full capability which greatly diminishes pasture stocking rates and animal productivity. When producers increase forage quality and quantity then stocking rates and health potential can be increased which improves the economic viability of their operation.

As extension specialists we see producers struggle everyday. Recently, a producer trying to grow pearl millet for his cattle experienced a poor stand. Upon further examination and an insistence on a soil test, the answer became quite obvious. Soil test results revealed a soil pH of 4.5 on this particular field and a soil fertility test recommendation at seven tons of lime per acre. It was obvious that this producer didn’t understand the importance of soil tests and doing the necessary liming to keep the soil pH in check. By understanding basic fertility and forage management practices, producers can utilize the data to make better informed decisions on fertilizer and lime usage and improve the natural resource base upon which agriculture depends.
Recent research at the University of Missouri by Dr.'s Blevens, Kallenbach, Davis and Crawford at Linneus, Columbia and Mt. Vernon has focused on the role of lime and phosphorus (P) on yield and mineral content of tall fescue pastures and stockpiled tall fescue. Increased calf gains during the summer, increased yields of stockpiled tall fescue and increased hay yields have been documented with P fertilization. Forage mineral concentrations of P and magnesium (Mg) have been increased in stockpiled tall fescue. Additional research is continuing on the effects of liming on yield and quality of tall fescue.

Through field demonstrations, Agronomy and Livestock Extension Specialists want producers to learn how proper fertilizer and lime management can make their pastures more profitable and sustainable. Also, the livestock will be more productive with less supplemental feed, minerals and even hay when considering stockpile forages. With increased fuel and machinery costs and the current swing in grain and by-product costs, stockpiling forage is becoming more feasible than ever. Participants are able to observe comparative forage field trials on fertilizing and liming in a local setting. In 2007, we had producers representing 7 surrounding counties. We currently have requests for workshop visits from producers in 2 additional counties.

Timetable for proposed research:

2008
Winter/Early Spring: site selection and layout; treatment applications; soil sample
Growing Season: harvests; forage quality analysis; data analysis
Periodic: demonstrations and field days

2009
Repeat harvests and forage analysis
Final soil tests
Demonstrations and field days

2010
Finalize data analysis and publish outcome
Demonstrations and field days

Strategy for application/transfer of knowledge:
Our greatest tool will continue to be field and demonstration days, workshops and tours. Educational information will also be distributed through publications of our regional newsletter “Ag Connection”, press releases to local newspapers and radio outlets. Another strategy will include presenting educational seminars at the Mid-Missouri Grazing Conference. The evaluation will include pre and post test for producers participating in our workshops related to their knowledge of the specific topic areas. A follow-up survey will be mailed to the participants to evaluate long-term behavioral changes to their management practices for economic impact analysis.

We appreciate your consideration of this grant.
ENVIRONMENTALLY SOUND HIGH IMPACT FORAGE MANAGEMENT RESEARCH BASED DEMONSTRATIONS FOR INCREASED LIVESTOCK PROFITABILITY BY INCREASING FORAGE PRODUCTION AND QUALITY; Todd Lorenz, Rich Hoormann, Wendy Flatt, Gene Schmitz, Joni Ross, Randa Doty and Rob Kallenbach

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Office Supplies/Support | 15% of the above total  | $776  | $700  | $348  |
Grant Total            | by year total              | $5,946| $5,370| $2,668|
Three year total       |                            | $13,984|
TODD E. LORENZ

WORK ADDRESS
University of Missouri Extension
608 East Spring Street
Boonville, MO 65233
(660) 882-5661

HOME ADDRESS
207 Barnes St.
Pilot Grove, MO 65276
(660) 834-6969

LICENSE OR CERTIFICATES
Missouri Department of Agriculture, Plant industries division,
Missouri Certified Public Operators, Category 1A License: P3450 1992-2003
Missouri Commercial Drivers License
Missouri Department of Health: Registered Installer

EDUCATION


B.S. May, 1986. Central Missouri State University, Warrensburg, MO 64093.
Major: Agriculture Business. Awarded the CMSU Agriculture Sophomore of the Year. Major Professor: Dr. Harold Van Cleaves.

WORK EXPERIENCE:
July 2000- Present Regional Horticulture/Agronomy Specialist-Providing equal program leadership in the fields of horticulture and agronomy in the Central Missouri 14 county region. Responsibilities include needs assessment, facilitation of educational programs, teaching, problem solving, assessing horticulture and agronomy related subject matter for clientele and developing university, community, agency, business and extension council linkages. Provide educational leadership in the development of programs and dissemination of research-based information related to agronomy and horticulture for producers, agribusiness, homeowners and the general public. As the Regional Horticulture Specialist, I am responsible for program development and leadership of the Central Missouri Master Gardener Program. I am responsible for coordination of core training modules, advanced education, meetings, field days, and conferences. I have modified the original Master Gardener program for correctional facilities to provide an opportunity for inmates to participate and volunteer hours back to the community, now titled Master Gardeners In Corrections (MaGIC). Our intent is to provide them the
necessary education, skills and abilities to seek and keep job in the field of horticulture upon release. I am responsible for identifying and developing positive relationships with agricultural leaders and assist in informing agribusiness and producers of program activities and current updates. In partnership with the University, I also serve on the Cooper County Soil and Water District board. I make all programs available to all audiences and promote the total mission of University of Missouri Extension using mass media, direct teaching methods, short courses, producer meetings, Internet capabilities, and individual consultations.

Nov. 1991- Soil Science Dept., University of Missouri, Columbia, MO 65211.
July 2000 Senior Research Specialist-Conducted soil fertility and forage fertility research for the Missouri Agriculture Experiment Station. While primarily responsible for the management of historical Sanborn Field and the F.L. Duley-M.F. Miller Soil Erosion Plots, I was also responsible for forage research on native warm season grasses on farmer cooperative sites and both the Wurdack and Bradford Agronomy Research Centers. My duties included: establishment of research in cooperation with private land owners and farmers, site selection, experimental design and layout, independent field research, hiring and supervision of field staff and students, land preparation, equipment maintenance for both modern farm and research plot equipment, pest control, harvesting, soil and plant sample data management from collection to analysis and from electronic input to statistical analyses, annual report and grant proposal writing, maintaining web site, conducting tours for people with varied background in agriculture, participation in field days and outreach activities. My responsibilities included work with the National Onsite Demonstration Project at Rock Bridge State Park. Coordination of soils and engineering research activities including monitoring of treatment fields where innovative onsite wastewater treatment and modern dispersal technologies were used. I was involved with the Field day activities in coordination with the Show-Me Clean Streams and the Bonne Femme Watershed Partnership that allowed demonstration of the Missouri Wastewater Small Flows Research and Training Center. Additionally, active with the development of a Soil and Water Conservation Clinic and Tour cosponsored by Mo-Ag industries Council and the University of Missouri to provide Certified Crop Advisors continuing education units in soil and water management.

PROFESSIONAL MEMBERSHIP AND COMMUNITY ACTIVITIES

National Association of County Agriculture Agents
North Central Region Vice Chair
Missouri Association of Agricultural Extension Professionals
President
University of Missouri Extension Association  
Fertilizer Agriculture Lime Advisory Council  
University of Missouri Extension Agri-Business Counselor  
Central Missouri Agriculture Category Chair  
Central Missouri Regional Technology Committee  
University of Missouri Farms and Centers Advisory Council  
Pilot Grove C-4 School Board  
Cooper County Soil and Water District; Moniteau and Cooper  
Cooper County Local Emergency Planning Committee  
Boonville Area Chamber of Commerce  
Knight of Columbus, Cleer Creek Council 2261

AWARDS AND PROFESSIONAL ACCOMPLISHMENTS
CMSU Agriculture Sophomore of the year, 1984  
University Outreach and Extension Gold Medal Award, 2001-2002  
University of Missouri Extension Association, UMEA Rookie of the year, 2002  
Community Development Academy, 2002  
University of Missouri Programming Excellence Award 2003  
Public Issues Leadership Development Conference, 2004  
National Association of County Agricultural Agents, North Central Region Communication  
Award: Computer Generated Program, 2004; Regional Finalist, Slide Set, 2005  
Missouri Extension Leadership Development, 2004-05  
Missouri Agricultural Extension Professional State Achievement Award 2004  
National Association of County Ag Agents National Achievement Award, 2005  
National Association of County Agricultural Agents National Recognition and Awards Vice  
Chair, 2002-2006; Chair 2007-2008  
Missouri Extension Leadership Development, 2004-2005  
Chamber of Commerce Service to Agriculture, 2007

Richard G. Hoormann

310 Salisbury St., Suite E
Montgomery City, MO 63361
hoormannr@missouri.edu

Summary:
I am a professional agronomy educator, with a strong record of combining consultation, research, field work and electronic tools with teaching, to meet the needs of the farm audience. I have educational leadership experience in the wholesale, USDA agencies and retailer setting. I am able to successfully manage time and resources to achieve planned goals.

**Major Career Responsibilities:**

History of developing and implementing agricultural education programs for a diverse farm audience.
Leadership of educational training, business strategies and sales programs for large farmers, retail and wholesale staff to enhance skill sets and performance base on sound agronomy principles.

**Career History and Selected Achievements:**

**Region Agronomy Specialist,**
University of Missouri
2005-Present

Responsibilities include identifying “teachable moment” opportunities, short term and long-term needs of clientele and implementing the plan-of-work as approved by the Regional Director. Responsible for the development of an overall agricultural education programs to meet the agricultural needs identified in the needs assessment process. Program management included developing logic models to produce desired changes and carry out the work necessary to evaluate markers identified in logic models.

Programs involve using a series of learning events such as meetings, newsletters, web base electronic news, demonstrations, field days, consultation and workshops to achieve program goals as assigned.

Leadership of the Universities of Missouri’s mission in the assigned area of work includes working closely with a variety of stakeholders including: commodity groups and volunteer and/or elected boards.

**Agronomist,**
RGH Associates
St. Peters, MO
2003-2005

Independent offering agronomy services to retail dealers.

**Region Agronomist,**
Agriliance LLC
St. Paul, MN
2000- 2003

As a region agronomist, I maintained close support of sales staff in states of MO, IL, KY and parts of IA. Duties included conducting proprietary product training for key customer staff and their key growers. Training
was conducted in Field Days, plot tours, at retailer plants and one-on-one. The region agronomist facilitated business marketing planning with the sales team using the discovery process to position training and products.

Field diagnostic work and product support was carried out for the Croplan Genetics seed division. This included teaching in demonstrations and research field days, dealer plot tours, and on site problem solving. In addition, field data collection and product performance issues were part of field duties.

I coordinated with AgriSolutions brand products research staff in selecting and placing products in University research trials.

Region Agronomist, 1995-2000
Farmland Industries, Inc
Kansas City, MO

The region agronomist position included working in support of sales staff. Accounts targeted were those within the top 20 percent of company sales. Duties included crop diagnostics work of production problems, product support and technical training for dealers.

Field testing of beta systems and customer training and general support of Farmland electronic tools such as GPS/GIS systems and field level Integrated Crop Management software was conducted for key customers involved in an industry setting environmental program titled AG•21

Extension Region Agronomy/Natural Resources Specialist, 1983-1995
University of Missouri
Outreach & Extension

Extension Instructor, 1980-1983
University of Nebraska
Cooperative Extension

Research Assistant, 1978-1979
Southern Illinois University

Certified Crop Advisor (ARPACS), 1996

Education:

Bachelor of Science  Southern Illinois University at Carbondale 1978
Major: Plant & Soil Science

Masters of Science  Southern Illinois University at Carbondale 1981
Major: Plant & Soil Science

Wendy R. Flatt, MS, P.A.S.
1017 Chouteau Lane, Boonville, MO 65233, Home: (660) 882-8992 Cell: (573) 999-2348 e-mail: wendyflatt@hotmail.com

Education

December 2001 Master’s of Science in Animal Sciences, Colorado State University. Fort Collins, Colorado.

Title of Thesis: Effects of salt and phosphorus supplementation on growth performance, cost of gain, carcass characteristics and digestibility of finishing feedlot cattle.

May 1993 Bachelor of Science in Animal Sciences, University of Missouri-Columbia. Columbia, Missouri.

Work Experience (1989-present)

March ‘03-present Regional Livestock Specialist/County Program Director- University of Missouri Extension, Mark Stillwell, Regional Director. David Baker, College of Agriculture, Food and Natural Resources, Program Leader.

Oct. 02-March 03 Area Sales Manager, Biozyme, Inc., Stockyards Expressway, St. Joseph, MO. Gus Kraijcek, National Sales Manager.


Jan.- March 2002 Senior Laboratory Technician, Department of Radiology. University of Missouri, Columbia, MO. Dr. John Lever.

1999-2001 Graduate Research Associate, Department of Animal Sciences. Colorado State University. Fort Collins, CO.

Fall 1998 Research Associate, Department of Animal Sciences. Colorado State University. Fort Collins, CO. Dr. Jack Whitter. Ranch-to-Rail Database.


Spring 1996 Herd Health Manager. Teague Diversified Incorporated, Wiggins, CO.
1994-1996 Feed Truck Driver and Veterinary Technician, Monfort’s of Colorado- Kuner Feedlot. Highway 34 Kersey, CO; Allen Gettman, Herd Health Supervisor.

**Work Experience (1989-present) continued**


Summer 1993 Research Associate, Department of Animal Sciences. Forage Systems Research Center, *University of Missouri- Columbia*. Linneus, MO.


Summer 1992 Summer Intern, V-8 Ranch and Hudson Cattle Company. Wharton and Bay City, TX.


**Publications**


Publications (continued)


Awards and Honors

- UMEA “Rookie of the Year” 2004
- USDA “Certificate of Appreciation” 2003
- Alltech Dairy School Scholarship 2001
- Alltech Symposium Graduate Travel Scholarship 2000-2001
- Salt Institute Fellowship-Honorable Mention 2000
- CSU Graduate Research Assistantship 1999-2001
- Colorado State University Dean’s List 1998-2001
- Marching Mizzou 1993
- College of Agriculture Research Scholarship 1992
- University of Missouri Dean’s List 1991-1993
- Pre-Veterinary Club Officer 1991-1993
- Missouri Department of Agriculture Scholarship 1988
Eugene G. Schmitz

Benton County Extension Center 26606 Ancient Cedar Drive
119 W. Main, PO Box 637 Warsaw, MO 65355
Warsaw, MO 65355 (660) 438-2776
(660) 438-5012
schmitze@missouri.edu

Present Position – October 2004 to present
University of Missouri Extension Livestock Specialist serving Benton, Pettis, Cooper, Morgan and Moniteau Counties.

Programming Efforts in Central Missouri
- Beef cattle nutrition and management, primarily cow-calf production.
- Pasture and forage management and utilization.
  - Conducting bermudagrass variety, yield and quality demonstrations.
  - Conducting fall Nitrogen fertility demonstrations with tall fescue.
- Regional grazing schools in Central Missouri in cooperation with NRCS personnel.
- Show-Me-Select Replacement Heifer Development Program in Central Missouri.

Past Position – February 2003 to October 2004
Colorado State University Cooperative Extension Livestock Agent
Golden Plains Area – Yuma, Kit Carson, Phillips and Washington Counties

Responsibilities:
- Provide educational assistance to citizens of Northeast Colorado.
- Assist livestock producers through educational programming, on-farm consultations and research activities.
  - Special emphasis has been on irrigated cool-season forage selection and management and irrigated legume demonstration plots.
  - W-SARE grant obtained for irrigated forage education program.
- Assist other Extension staff and related agencies as needed.

Past Position – April 1995 to January 2003
University Outreach and Extension Livestock Specialist serving Mercer, Grundy, Livingston and Caldwell Counties in Northwest Missouri

Programming Efforts in NW Missouri
- Beef cattle nutrition and management, primarily cow-calf production.
- Pasture and forage management and utilization.
  - Conducted fall grazing demonstrations utilizing stockpiled tall fescue pastures.
  - Conducted research evaluating fall nitrogen fertilization programs for tall fescue pastures.
• Show-Me-Select Replacement Heifer Development Program in NW Missouri.
• Green Hills Premier Beef Marketing program.
• Northwest Missouri Performance Testing Program and Bull Sale.
• Swine and dairy nutrient management planning.
• Regional grazing schools in NW Missouri in cooperation with NRCS personnel.
• Grassland Evaluation Contests for area high school Vo-Ag departments in cooperation with NRCS and Missouri Department of Conservation.

Education

Associate of Arts – Colby Community College, Colby, KS – May 1980
B.S. – Animal Science – Kansas State University, Manhattan, KS – May 1982
Advisor: Dr. Jack C. Whittier.

Areas of Research
• Effects of various number of paddocks and stocking rates on steer and pasture performance in North Missouri.
• Evaluation of whole cottonseed as an energy-protein supplement for gestating beef cows

Professional and Community Memberships

• Benton County Soil and Water Conservation District Board of Supervisors
• Benton County Cattlemen’s Association

Past Work Experience

• Extension Associate II – 1990 and 1991 – Iowa State University, Agronomy Extension. Coordinated 22 on-farm pasture and forage management demonstrations relating to establishment, maintenance and utilization of forage resources in South Central Iowa.
• Graduate Research Assistant – 1987 through 1989 at the University of Missouri – Columbia.
• Feed mill and grain elevator superintendent – 1984 through 1987 at Hackney Farmers Union Coop, Winfield, KS.
• Sales representative – 1982 through 1984 for Vigortone Ag Products in Central Kansas.

Other relevant experience

• Raised on farm at Leoti, KS.
- General farm and ranch labor during college at Manhattan, KS.
- Sales experience, wholesale and retail.
- Personal computers – Microsoft (Word, Excel, PowerPoint, etc.), ration formulation programs, cattle record keeping programs.

Oral Presentations

Abstracts


Technical Reports


Joni Ross
100 E. Newton St. 4th Floor
Versailles, MO 65084
(578) 378-5358
rossjo@missouri.edu

Education
M.S., Crop, Soil & Environmental Science, December 2004 (University of Arkansas, Fayetteville, AR)
B.S.A., Crop Management, May 2002 (University of Arkansas, Fayetteville, AR)

Experience

Regional Agronomy Specialist: (March 2007-present)
University of Missouri Extension, Versailles, MO. I am the Regional Agronomy Specialist for Morgan, Moniteau, Benton, and Pettis Counties.

Class Instructor: (August 2005-May 2006)
Western Illinois University, Macomb, IL. Taught a Jr./Sr. level undergraduate course that focused on developing the student’s skills in public speaking and scientific writing.

Graduate Research and Teaching Assistant: (May 2002-Dec. 2004)
University of Arkansas, Fayetteville, AR. Conducted field research experiments for major advisor, as well as conducting M.S. research. Preformed several soil testing procedures in the Soil Testing Laboratory. Taught Introduction of Soil Science Laboratory class.

Gypsy Moth Trapper: (May-August 2000 and 2001)
USDA-APHIS, headquartered in Chicago, IL. Worked two summers for the USDA-APHIS department in the trapping, tracking, and eradication of the destructive gypsy moth. The job entailed a basic knowledge of the gypsy moth, mapping reading, and the ability to write clear and concise reports.

Laboratory Technician: (Aug. 1998 to May 2001)
University of Arkansas, Fayetteville. Worked in the Soil Characterization Laboratory for three years. Was in charge of performing various soil procedures such as: carbon analysis, particle size, extractable acidity, soil moisture and sand content. A knowledge of field work, such as running a soil probe, taking soil water table measurements, and writing soil descriptions, was acquired in this job.

Memberships

Missouri Association of Agricultural Extension Professionals
University of Missouri Extension Association
Soil Science Society of America
American Society of Agronomy
Crop Science Society of America
University of Arkansas Crop, Soil, and Environmental Science Club
Alpha Zeta: University of Arkansas Fraternity/Sorority of Alpha Zeta

Publications


**Presentations**


Crop Protections Association Conf. on 1 Dec. 2003, Fayetteville, AR.


Randa E. Doty

305 N. Market 660-582-8101
Maryville, MO 64468 brukhorstr@missouri.edu

Education:

Master of Science: Agriculture
Northwest Missouri State University, Maryville, Missouri 64468 December 16, 2005

Bachelor of Science Double Major: Animal Science and Agricultural Business Cum Laude
Northwest Missouri State University, Maryville, Missouri 64468 May 1, 2004

Organizations:

National Association of County Agricultural Agents
National association for agriculture extension educators and professionals to foster professional improvement, communication and cooperation, and enhancement of the image of the cooperative extension system. Attended the 2006 Annual Meeting and Professional Improvement Conference.

Missouri Agricultural Extension Professionals
Organization of Missouri’s agricultural extension professionals that encourages professional improvement, promotes high standards among members, and recognizes outstanding leadership and service.

University of Missouri Extension Association
Association of MU Extension professionals that encourages and creates opportunities for professional improvement and maintains high standards for professional ethics and efficiency. Serving as a member of the Nominations & Awards Committee.

Nodaway County Soil and Water Conservation District
Division of the Missouri Department of Natural Resources that administers the policies and general programs developed by the Soil and Water Districts Commission for the saving of Missouri soil and water.

Northwest Missouri State University Sigma Alpha Alumni Chapter
National Professional Agriculture Sorority that strives to promote its members in all facets of agriculture and strengthen the bonds of friendship among them. Assisted in reorganization of the chapter and currently serving as Vice President.

**Northwest Missouri State University Order of Omega**

National Honorary for members of the Greek Community who have a high standard of leadership, scholarship and service.

**Northwest Missouri State University Mortar Board**

Senior Honor Society that represents students who have outstanding scholarship, leadership and service.

**Northwest Missouri State University Delta Tau Alpha**

Agriculture Honor Fraternity representing the top 35% of Agriculture Students. Served as 2003-2004 Secretary.

**Awards & Honors:**

**2007 Rookie of the Year**

Awarded by the University of Missouri Extension Association, to recognize outstanding achievement by a new faculty member.

**2004 Bank Midwest Outstanding Senior Award**

Awarded each year to an outstanding Senior Agriculture Business major based on scholarship and involvement within the Agriculture Department.

**2001 Northwest Missouri State Livestock Judging Team**

Represented Northwest Missouri State University at nationwide collegiate livestock judging competitions. Received the 2002 and 2003 Northwest Missouri State University Floyd B. Houghton Livestock Evaluation Award based on scholarship and placing at collegiate livestock judging contests.

**Agriculture Future of America**

Identifies, encourages, and supports outstanding college men and women who are preparing for a career in agriculture. Awarded the 2000 Howard County AFA Scholarship and the 2001 Northwest Missouri State University AFA Scholarship. Completed tracts 1, 2 and 3.

**Work Experience:**

**University of Missouri Extension**  
Sedalia, MO/Maryville, MO

**Agriculture Business Specialist**  
(6/1/06-Present)

Work in a team environment with University of Missouri Faculty to provide agriculture business programming to the residents of assigned counties. To address a local need for education, programs were identified, implemented, and evaluated. Learned how to measure impact of education obtained from MU Extension.

**Castlewood Acres Pet Store**  
Moberly, MO

**Salesperson**  
(3/1/06-5/15/06)

Maintained the pet store’s cleanliness while assisting customers with purchasing pets and supplies. Answered questions about pet health and care.
Northwest Missouri State University

Graduate Assistant ~ (8/30/04-12/16/05)
Selected by agriculture faculty to assist with undergraduate teaching, research and various duties assigned by supervisor including: writing articles for the department newsletter, preparing and organizing materials for laboratory exercises, conducting literature reviews, and teaching/managing the speculation exercise in Applied Futures Marketing class.

Agriculture Ambassador ~ (8/26/02-5/1/04)
Represented and recruited for the Agriculture Department at recruitment functions, including the Western Farm Show and National FFA Convention. Gave tours of agriculture facilities to prospective agricultural students.

Telephone Ambassador ~ (4/15/03-3/1/04)
Contacted prospective students to inform them of representative visits, acceptance into the university and to answer questions pertaining to Northwest.

University Peer Advisor ~ (8/26/02-12/20/02 and 8/25/03-12/19/03)
Worked closely with a faculty advisor to assist first-time freshman adjusting to college. Maintained a friendly, open classroom environment for 25 students to foster beneficial question and answer sessions.

Animal Science Supplemental Instructor ~ (1/14/02-5/2/03)
Selected by faculty to assist the Animal Science instructor and reinforce materials presented in class. Conducted bi-weekly tutoring sessions. Communicated with students to identify problems and facilitate their success in class.

USDA Natural Resources Conservation Service

Student Trainee ~ (5/9/05-12/1/05)
Participated in the Student Trainee Enhancement Program. Worked closely with Federal and State employees to implement conservation practices in Decatur County, Iowa. Utilized RUSLE2 to determine soil loss and ArcView and ToolKit to prepare farm plans. Assisted with surveying grade stabilization structures and terraces.

University Outreach and Extension Service

Office Assistant ~ (6/9/03-8/8/03)
Worked closely with five Extension Specialists, the Boone County Extension Council and the Boone County 4-H program. Assisted specialists with: Boone County Fair preparation, researching Missouri Small Business Innovation awards, preparing displays and general office duties.

Premium Standard Farms, Inc.

Production Intern ~ (5/20/02-8/16/02)
Collected research data on 1200 pigs within a 2500 sow unit during a 12-week span. Compiled, analyzed and presented data and conclusions at the end of the internship. Worked closely with employees on the farm to care for sows and piglets. Chosen by production manager to conduct an Animal Response Test on 13 company farms.
Robert L. Kallenbach

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Education:
Ph.D., Agronomy, with an emphasis in statistics. 1994. Texas Tech University, Lubbock TX.
B.S., Agronomy. 1989. Southwest Missouri State University, Springfield, MO.

Professional Employment and Experience (Since 1994):

Professional Service, Honors and Awards (Since 2001):
2004: Young Crop Scientist award presented by the Crop Science Society of America (International award given to one scientist under 37 years of age annually).
2004: Gamma Delta Sigma Outstanding Extension Specialist Award.
2004: J.W. Burch Outstanding Extension Specialist Award.
2002: Merit Award for outstanding contributions to forage science presented by the American Forage and Grassland Council.
2001: Provost’s Award for Creative Extension Programming by New Faculty.

Membership in Professional Societies:
American Society of Agronomy, 1990 to present
Crop Science Society of America, 1990 to present
American Forage and Grassland Council, 1990 to present
Missouri Forage and Grassland Council, 1998 to present
Gamma Sigma Delta Honor Society of Agriculture, initiated in 1988

Research Publications:
Refereed Journal Articles 28
Book Chapters 2
Proceedings and Abstracts 80

Extension Education (Since 1998):
Extension Manuals and Guides 24
Workshops and Short Courses taught  
88

Extension education meetings and classes taught  
235
Selected publications

**Refereed Journal Articles (Since 2003):**


**Book Chapters:**
