Letter of Transmittal

Office of the Director

To the Honorable Mark Parkinson, Governor of Kansas

It is my pleasure to transmit herewith the report of the Agricultural Experiment Station of the Kansas State University of Agriculture and Applied Science for the fiscal year ending June 30, 2009. This report contains the title, author, and publication information for manuscripts published by station scientists. The report was published only in electronic format.

Gary Pierzynski
Interim Director, K-State Research and Extension
and Interim Dean, College of Agriculture
A Message from the Director

We are pleased to provide this 2009 Director’s Report of Research in Kansas. The report is intended to inform you about our research programs under way and some of our accomplishments. K-State Research and Extension is dedicated to a safe and sustainable food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis, and education.

This report is produced and distributed in electronic format only. An annual report distributed via the Internet provides information in a more timely fashion, eliminates printing costs, and makes the report accessible to a broader audience.

The 2009 Director’s Report of Research in Kansas provides a list of journal articles, station publications, and other published manuscripts from scientists in our departments, centers, fields, and associated programs.

The Agricultural Experiment Station is the research component of K-State Research and Extension. Our research programs provide the latest information used by our extension programs to address issues facing Kansas citizens.

Gary Pierzynski
Interim Director, K-State Research and Extension
and Interim Dean, College of Agriculture

This publication from the Kansas State University Agricultural Experiment Station and Cooperative Extension Service has been archived. Current information is available from http://www.ksre.ksu.edu.
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To minimize irrelevant items when searching for common names such as Smith or Johnson, go to the page for the author’s unit (or use the unit bookmark) to start your search.
Research Components of the Kansas Agricultural Experiment Station*
(See map, p. 2)

Academic Departments

College of Agriculture
Agricultural Economics
Agronomy
Animal Sciences and Industry
Communications
Entomology
Grain Science and Industry
Horticulture, Forestry and Recreation Resources
Plant Pathology

College of Arts and Sciences
Biochemistry
Biology
Statistics

College of Engineering
Biological and Agricultural Engineering
Chemical Engineering

College of Human Ecology
Apparel, Textiles, and Interior Design
Hospitality Management and Diietetics
Human Nutrition

College of Veterinary Medicine
Anatomy and Physiology
Clinical Sciences
Diagnostic Medicine/Pathobiology
Veterinary Diagnostic Lab

Research Centers

Agricultural Research Center–Hays
Horticulture and Forestry Research-Extension Center
John C. Pair Horticultural Center
Northwest Research-Extension Center
Southeast Agricultural Research Center
Southwest Research-Extension Center

Experiment Fields

East Central - Ottawa
Harvey County – Hesston (Closed in Dec. 2009)
Irrigation - Scandia
Kansas River Valley - Rossville, Silver Lake
North Central - Belleville
Pecan Field - Chetopa
South Central - Hutchinson

Associated Programs

Bioprocessing and Industrial Value-Added Program
Center for Animal Identification
Center for Biobased Products by Design
Center for Sustainable Energy
Food Science Institute
Great Plains Diagnostic Network
Great Plains Sorghum Improvement and Utilization Center
Kansas Ag and Rural Leadership
Kansas Center for Agricultural Resources and the Environment
Kansas Center for Sustainable Ag and Alternative Crops
Kansas Cooperative Development Center
Kansas Water Resources Institute
Konza Prairie Biological Station
International Grains Program
International Meat and Livestock Program
Plant Biotechnology Center
Weather Data Library
Wheat Genetic and Genomic Resources Center

* List includes units having faculty with KAES appointments in fiscal year 2009. For a full list of departments and programs of the Kansas State University Agricultural Experiment Station and Cooperative Extension Service and for additional information on K-State Research and Extension, see www.ksre.ksu.edu, and click on “About Us” in the sidebar.
Station Publications

Reports of Progress
SRP 999  2008 Kansas Performance Tests with Winter Wheat Varieties
SRP 1000  2008 Kansas Performance Tests with Corn Hybrids
SRP 1001  Swine Day 2008 (electronic only)
SRP 1002  Dairy Research 2008
SRP 1003  2008 Kansas Performance Tests with Soybean Varieties
SRP 1004  2008 Kansas Performance Tests with Grain Sorghum Hybrids
SRP 1006  2008 Kansas Performance Tests with Sunflower Hybrids
SRP 1007  2009 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland
SRP 1008  2008 Kansas Performance Tests with Cotton Varieties
SRP 1009  2008 National Winter Canola Variety Trial
SRP 1010  Beef Cattle Research 2009 (electronic only)
SRP 1011  Agronomy Field Research 2008 (electronic only)
SRP 1012  Kansas Fertilizer Research 2008 (electronic only)
SRP 1013  2009 Agricultural Research, Southeast Agricultural Research Center
SRP 1014  Field Day 2009, Southwest Research-Extension Center
SRP 1016  Roundup 2009, Agricultural Research Center–Hays
SRP 1017  Agronomy Field Research 2009 (electronic only)

Special Publications
DRR08  Director's report of research in Kansas 2008 (electronic only)

Suffix Letters for Contribution Numbers
A  Proceedings of meeting or symposium
B  Book or book chapter
C  Computer program
D  Department report
J  Journal manuscript
S  Station publication (report of progress, keeping up with research, special publication, or bulletin)
T  Trade publication

Categories are based on information received before manuscripts are published. Type of publication sometimes changes later.

Station publications are available on the World Wide Web at: www.ksre.ksu.edu/library

Department reports are available only from the appropriate department office. Copies of journal articles or other external publications must be obtained from authors, journals, or a library. Some citations include a digital object identifier (doi) for use in retrieving manuscripts online. To locate an object using its doi, visit http://dx.doi.org/.
**Publications of Station Scientists** (by unit and contribution number)

**Note:** Manuscripts are cross listed under all relevant units according to authors’ affiliation and appointment (i.e., Kansas Agricultural Experiment Station tenths).

**Administration**

<table>
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<th>Title</th>
<th>Authors</th>
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<tr>
<td>DRR08</td>
<td>Director’s report of research in Kansas 2008</td>
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<td>May 2009, 209 pp. (electronic only)</td>
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**Agricultural Economics**

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<th>Contribution Number</th>
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<tr>
<td>08-143-J</td>
<td>Soybean yield and yield components response to plant density in narrow row systems</td>
<td>M. Epler, S. Staggenborg</td>
<td>Crop Management, 2008</td>
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<tr>
<td>09-064-D</td>
<td>Staff, programs, and publications in agricultural economics, Kansas State University 2007</td>
<td>D.L. Foster</td>
<td>Agricultural Economics Department Staff paper no. 09-01, 2008, 36 pp.</td>
</tr>
<tr>
<td>09-364-D</td>
<td>Staff, programs, and publications in agricultural economics, Kansas State University 2008</td>
<td>J. Maberry</td>
<td>Agricultural Economics Department Staff paper no. 09-03, 2009, 45 pp.</td>
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**Publications without contribution numbers**

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<th>Title</th>
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<tr>
<td>A stochastic model to compare breeding system costs for synchronization of estrus and artificial insemination to natural service</td>
<td>S.K. Johnson, R.D. Jones</td>
<td>The Professional Animal Scientist, 24:588-595, 2008</td>
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**Agronomy**

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<th>Contribution Number</th>
<th>Title</th>
<th>Authors</th>
<th>Journal/Source</th>
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04-111-J Comparison of genotype and cultural practices to control iron deficiency chlorosis in soybean
J.E. Lingenfelser, W.T. Schapaugh, J.P. Schmidt, J.J. Higgins
Communications in Soil Science and Plant Analysis, 36:1047-1062, 2005

04-156-J Comparison of the Weibull model with measured wind speed distributions for stochastic wind generation
S.J. van Donk, L.E. Wagner, E.L. Skidmore, J. Tatarko
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04-189-J On the construction and calibration of dual-probe heat capacity sensors
J.M. Ham, E.J. Benson

04-211-J Carbon and nitrogen mineralization as affected by drying and wetting cycles
M.M. Mikha, C.W. Rice, G.A. Milliken
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04-256-J Carbon dynamics in tallgrass prairie and wheat ecosystems
R. Kocyigit, C.W. Rice
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04-262-J Lagoon-biogas emissions and carbon balance estimates of a swine production facility
T.M. DeSutter, J.M. Ham
Journal of Environmental Quality, 34:198-206, 2005

04-332-B Carbon cycle in soils: Dynamics and management
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04-382-J A field-based assessment tool for phosphorus losses in runoff in Kansas
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C.J. Dell, M. A. Williams, C.W. Rice
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R.J. Gehl, J.P. Schmidt, L.D. Maddux, W.B. Gordon
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05-327-J Emerging technologies for in situ measurement of soil carbon
R.J. Gehl, C.W. Rice
Climate Change, 80:43-54, 2007

06-083-J Post-harvest soil nitrate in irrigated corn: Variability among eight field sites and multiple nitrogen rates

06-112-J Phosphorus source effects on soil organic phosphorus: A 31P NMR study
M. Shaqfkat, G.M. Pierzynski, K. Xia
Communications in Soil Science and Plant Analysis, 40: 1722-1746, 2009

06-141-J Greenhouse gas mitigation in agriculture

06-222-J Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture

06-242-J Modification and validation of GLEAMS for prediction of phosphorus leaching in waste-amended soils
N.O. Nelson, J.E. Parsons
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08-073-J Efficacy of preemergence application of S-metolachlor plus fomesafen or metribuzin as an element in the control of common waterhemp (Amaranthus rudis Sauer) in soybeans
M.G. Duff, K. Al-Khatib, D.E. Peterson
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08-074-J Relative competitiveness of protoporphyrinogen oxidase-resistant common waterhemp (Amaranthus rudis) M.G. Duff, K. Al-Khatib, D.E. Peterson
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08-083-J Soil temperature and planting depth effects on tef emergence
S. Evert, S. Staggenborg, B.L. Olson

08-143-J Soybean yield and yield components response to plant density in narrow row systems
M. Epler, S. Staggenborg
Crop Management, 2008
doi:10.1094/CM-2008-0925-01-RS

08-167-B Linkage disequilibrium and association mapping in the Triticeae
M.E. Sorrells, J. Yu

08-168-J Differential response of grain sorghum hybrids to foliar-applied mesotrione
Weed Technology, 23:28-33, 2009

08-196-J Impact of nighttime temperature on physiology and growth of spring wheat

08-213-J Sensitivity of grain sorghum to high temperature stress during reproductive development
P.V.V. Prasad, S.R. Pisipati, R.N. Mutava, M.R. Tuinstra
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08-217-J Preemergence herbicide efficacy and phytotoxicity in grain sorghum
P.W. Geier, P.W. Stahlman, D.L. Regehr, B.L. Olson
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08-219-J Protection of soil organic C and N in temperate and tropical soils: Effect of native and agroecosystems
K.P. Fabrizzi, C.W. Rice, T.J.C. Amado, J. Fiorin, P. Barbagelata, R. Melchiori
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08-237-J Source specific fecal bacteria modeling using source and water assessment tool model
P.B. Parajuli, K.R. Mankin, P.L. Barnes
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08-249-J Comparison of AnnAGNPS and SWAT model simulation results in USDA-CEAP agricultural watersheds in south-central Kansas
P.B. Parajuli, O.O. Nelson, L.D. Frees, K.R. Mankin
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K.A. Baum, J.M. Ham, N.A. Brunsell, P.J. Coyne

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D.W. Sweeney, G.L. Kilgore, K.W. Kelley
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P.V.V. Prasad, S.A. Staggenborg, Z. Ristic

08-284-J Applicability of targeting vegetative filter strips to abate fecal bacteria and sediment yield using SWAT
P.B. Parajuli, K.R. Mankin, P.L. Barnes
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K.W. Kelley, D.W. Sweeney
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08-301-J Soil aggregation and carbon sequestration are tightly correlated with the abundance of arbuscular mycorrhizal fungi: Results from long-term field experiments
G.W.T. Wilson, C.W. Rice, M.C. Rillig, A. Springer, D.C. Harnett

08-329-J Efficacy of herbicide seed treatments for controlling *Striga* infestation of sorghum
M.R. Tuinstra, S. Soumana, K. Al-Khatib, I. Kapran, A. Toure, A. van Ast, L. Bastaans, N.W. Ochanda, I. Salami, M. Kayentao, S. Dembele
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J.M.G. Thomas, P.V.V. Prasad, K.J. Boote, L.H. Allen, Jr.

09-030-J Discovery and mapping single feature polymorphisms in wheat using Affymetrix arrays
A.N. Bernardo, P.J. Bradbury, H-X. Ma, S-W Hu, R.L. Bowden, E.S. Buckler, G-H. Bai
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09-033-J Lesion mimic associates with adult plant resistance to leaf rust infection in wheat
T. Li, G. Bai
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09-043-J Influence of fungicide and sowing density on the growth and yield of two groundnut cultivars
J.B. Naab, K.J. Boote, P.V.V. Prasad, S.S. Seini, J.W. Jones

09-051-J Conversion of grassland to coniferous woodland has limited effects on soil nitrogen cycle processes
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Journal of ASTM International, 6(5), 2009
doi:10.1520/JAI102147

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Multiple authors.
Coordinating author: J. Lingenfelser
09-108-S 2008 Kansas Performance Tests with Soybean Varieties
Multiple authors.
Coordinating author: J. Lingenfelser

09-109-S 2008 Kansas Performance Tests with Grain Sorghum Hybrids
Multiple authors.
Coordinating author: J. Lingenfelser

09-121-J Grazing effects on yield and quality of hard red and hard white winter wheat
J. Holman, C. Thompson, R. Hale, A. Schlegel

09-140-J Selection before backcross during exotic germplasm introgression
N. Ochanda, J. Yu, P.J. Bramel, A. Menkir, M.R. Tuinstra, M.D. Witt
Field Crops Research, 112:37-42, 2009

09-145-J Measuring seepage from waste lagoons and earthen basins with an overnight water balance test
J.M. Ham, K.A. Baum
Transactions of the ASABE, 52:835-844, 2009

09-153-S 2009 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland
Multiple authors.
Coordinating author: D. Peterson

09-156-B Applications of linkage disequilibrium and association mapping in maize
E.S. Ersoz, J. Yu, E.S. Buckler

09-157-J Partitioning and accumulation of heavy metals in sunflower grown at biosolids farm in EDTA-facilitated phytoremediation
M.S. Liphadzi, M.B. Kirkham
Bioremediation, Biodiversity, and Bioavailability, 3:36-42, 2009

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Multiple authors.
Coordinating author: J. Lingenfelser

09-208-S 2008 Agronomy Field Research
Multiple authors.
Coordinating author: J. Shroyer

09-209-S Kansas Fertilizer Research 2008
Multiple authors.
Coordinating author: D. Ruiz Diaz

09-213-J The potential of ultrahigh throughput genomic technologies in crop improvement.
J. Yu
The Plant Genome, 2:2, 2009
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09-225-S 2009 Agronomy Field Research
Multiple authors.
Coordinating author: J. Shroyer
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Multiple authors.
Coordinating author: M. Stamm

09-259-S 2008 Kansas Performance Tests with Cotton Varieties
Multiple authors.
Coordinating author: S. Staggenborg

09-264-S 2009 Agricultural Research
Multiple authors.
Coordinating author: L. Lomas

09-292-S Field Day 2009, Southwest Research-Extension Center
Multiple authors.
Coordinating author: R. Currie
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Growth and yield response to simulated hail damage in guar
J.W. Sij, J.P. Ott, B.L.S. Olson, T.A. Baughman
Agronomy Journal, 97:1636-1639, 2005

Stalk persistence of interseeded wheat and rye cover crops treated at two growth stages and six rates of glyphosate
J.W. Sij, B.L.S. Olson, J.P. Ott, T.A. Baughman.

Tolerance of three wheatgrass cultivars to sulfsulfonyl herbicide
J.W. Sij, B.L.S. Olson, J.P. Ott, D.P. Malinowski

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B.L.S. Olson, D.H. Rogers

Skip-row planting patterns stabilize corn grain yields in the central Great Plains
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N.L. Klocke, L.R. Stone, T.J. Dumler, S. Briggeman

Irrigation scheduling for deficit irrigation
N.L. Klocke, L.R. Stone, D.A. Bolton
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Anatomy and Physiology

06-302-J Glycoprotein E (gE) specified by bovine herpesvirus type 5 (BHV-5) enables transneuronal virus spread and neurovirulence without being a structural component of enveloped virions
A. Al-Mubarak, J. Simon, C. Coats, J.D. Okemba, M.D. Burton, S.I. Chowdhury

08-076-J Epithelial barrier modulation by a channel forming peptide
S. Somasekharan, R. Brandt, T. Iwamoto, J.M. Tomich, B.D. Schultz

08-154-J Bradykinin-stimulated cyclooxygenase activity stimulates vas deferens epithelial anion secretion in vitro
F. Pierucci-Alves, B.D. Schultz

09-138-J NC-1059, a channel-forming peptide that modulates drug delivery across in vitro corneal epithelium
J. Martin, P. Malreddy, T. Iwamoto, L. Freeman, H. Davidson, J.M. Tomich, B.D. Schultz

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Animal Sciences and Industry

02-296-J Source of dietary lipid may modify the immune response in stressed feeder cattle

02-321-J Effects of grain processing and dietary lipid source on performance, carcass characteristics, plasma fatty acids, and sensory properties of steaks from finishing cattle
H.J. LaBrune, C.D. Reinhardt, M.E. Dikeman, J.S. Drouillard

08-355-J Application of acetate buffer in pH adjustment of mash and its influence on fuel ethanol fermentation
R. Zhao, S.R. Bean, B.A. Crozier-Dodson, D.Y.C. Fung, D. Wang
Journal of Industrial Microbiology and Biotechnology, 36(1):75-85, 2009

03-387-J Genetic relationship between sex-specific traits in beef cattle: Mature weight, weight adjusted for body condition score, height and body condition score of cows, and carcass traits of their steer relatives
K.A. Nephawe, L.V. Cundiff, M.E. Dikeman, J.D. Crouse, and L.D. Van Vleck

04-236-J Effect of space allowance during rearing and selection criteria on performance of gilts over three parities in a commercial swine production system
05-030-J The optimal standardized ileal digestible lysine and total sulfur amino acid requirement for finishing pigs fed ractopamine hydrochloride

05-162-J Effects of ascorbic acid, rosemary, and Origanox™ in preventing bone marrow discoloration in beef lumbar vertebrae in aerobic and anaerobic packaging systems

06-188-J Effects of steroidal implantation and ractopamine-HCl on nitrogen retention, blood metabolites and skeletal muscle gene expression in Holstein steers

06-230-J Effects of concentrate level and pen configuration on performance of Boer crossbred goat kids
M.E. Corrigan, J.S. Drouillard, E.R. Loe, B.E. Depenbusch, M.J. Quinn

06-241-B Rapid microbiological methods in food diagnostics
D.Y.C. Fung

06-322-J Growth characteristics, blood metabolites, and insulin-like growth factor system components in maternal tissues from gilts fed L-carnitine through day seventy of gestation

07-237-J Pre-cooked fiber-enriched wheat flour obtained by extrusion: Rheological and functional properties

07-266-J Determining the accuracy of gestation feed drops
J.D. Schneider, M.D. Tokach, S.S. Dritz, J.L. Nelssen, J.M. DeRouchey, R.D. Goodband

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T.A. Wickersham, E.C. Titgemeyer, R.C. Cochran, E.E. Wickersham

07-288-J Effect of rumen-degradable intake protein supplementation on urea kinetics and microbial use of recycled urea in steers consuming low-quality forage

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Rat umbilical cord stem cells completely abolish rat mammary carcinomas with no evidence of metastasis or recurrence 100 days post-tumor cell inoculation

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