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2003



2003 Director's Report of Research in Kansas

July 1, 2002 to June 30, 2003
Agricultural Experiment Station
Kansas State University

 **KSTATE**
Kansas State University

Letter of Transmittal

Office of the Director

*To the Honorable Kathleen Sebelius,
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, 2003. This report contains the title, author, and publication information for manuscripts published by station scientists. It also contains a list of the research projects that were active during that period and a financial statement for the 2003 fiscal year. The report was published only in electronic format.

George E. Ham, Interim Director

A Message from the Director

We are pleased to provide this 2003 Director's Report of Research in Kansas. The report is intended to inform you about our research programs underway and some of our accomplishments for 2003. 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 2003 Director's Report of Research in Kansas provides a list of departments, centers, and fields; station publications; active K-State Research and Extension projects; commercial grants and contracts; and financial information.

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.



George E. Ham
Interim Director
Agricultural Experiment Station



Contents

Research Components.....	5	15. Food Science Institute.....	25
Station Publications.....	6	16. Grain Science and Industry.....	25
Publications of Station Scientists.....	7	17. Horticulture, Forestry and Recreation Resources.....	28
1. Agricultural Economics.....	7	18. Hotel, Restaurant, Institution Management and Dietetics.....	28
2. Agronomy.....	7	19. Human Nutrition.....	29
3. Anatomy and Physiology.....	11	20. Plant Pathology.....	30
4. Animal Sciences and Industry.....	12	21. Sociology, Anthropology and Social Work.....	32
5. Biochemistry.....	15	22. Statistics.....	32
6. Biological and Agricultural Engineering.....	17	23. Agricultural Research Center–Hays.....	33
7. Biology.....	19	24. Northwest Research-Extension Center.....	34
8. Chemical Engineering.....	21	25. Southeast Agricultural Research Center.....	35
9. Civil Engineering.....	21	26. Southwest Research-Extension Center.....	36
10. Communications.....	22	Active Projects.....	38
11. Diagnostic Medicine/Pathobiology.....	22	Financial Statement.....	49
12. Director’s Office.....	22		
13. Entomology.....	23		
15. Food Animal Health and Management Center.....	24		

To find publications by a particular scientist, use the Find icon (binoculars) in the Acrobat tool bar in this document and put the surname in the dialog box. Use Find Again until all relevant publications are found.

To minimize irrelevant items when searching for common names such as Smith or Martin, go to the page for the scientists’ department (or use the department bookmark) to start your search.

Research Components of the Kansas State University Agricultural Experiment Station and Cooperative Extension Service

K-State Research and Extension

Agricultural Economics

Agronomy

provides soil testing service

Animal Sciences and Industry

includes International Meat and Livestock Program

provides chemical analyses of feedstuffs

Communications

includes Weather Data Library

Entomology

provides scanning electron microscope service

Grain Science and Industry

includes International Grains Program and

Food and Feed Grains Institute

Horticulture, Forestry and Recreation Resources

Plant Pathology

includes Wheat Genetics Resource Center and the

Plant Biotechnology Center

College of Arts and Sciences

Biochemistry

Biology

provides plant identification service

Sociology, Anthropology and Social Work

Statistics

provides statistical consultation and assistance

College of Engineering

Biological and Agricultural Engineering

Chemical Engineering

Civil Engineering

College of Human Ecology

Apparel, Textiles and Interior Design

Hotel, Restaurant, Institution Management and Dietetics

Human Nutrition

includes Sensory Analysis Center

School of Family Studies and Human Services

College of Veterinary Medicine

Anatomy and Physiology

Diagnostic Medicine/Pathobiology

Food Animal Health and Management Center

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 (see map, pg. 49)

East Central●

Harvey County●

Irrigation●▼

Kansas River Valley●▼

Cornbelt●

North Central●

Pecan Field■

Sandyland●▼

South Central●

South Central Annex●

● Agronomy

▼ Biological and Agricultural Engineering

■ Horticulture

Station Publications

Reports of Progress

- SRP 896 2002 Kansas Performance Tests with Winter Wheat Varieties
- SRP 897 Swine Day 2002 (electronic only)
- SRP 898 Dairy Day 2002 (electronic only)
- SRP 899 2002 Kansas Performance Tests with Corn Hybrids
- SRP 900 2002 Kansas Performance Tests with Grain Sorghum Hybrids
- SRP 901 2002 Kansas Performance Tests with Soybean Varieties
- SRP 902 2003 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland
- SRP 903 Kansas Fertilizer Research 2002 (electronic only)
- SRP 904 2002 Kansas Performance Tests with Alfalfa Varieties
- SRP 905 2002 Kansas Performance Tests with Sunflower Hybrids
- SRP 906 2002 Kansas Performance Tests with Summer Annual Forages
- SRP 908 2003 Cattlemen's Day (electronic only)
- SRP 909 2002 Agricultural Research Southeast Agricultural Research Center
- SRP 910 Field Day 2002: Southwest Research-Extension Center
- SRP 911 2002 Turfgrass Research (electronic only)

Keeping Up with Research

- SRL 136 A History of Wheat Improvement at Kansas State University
- SRL 137 Assessing the Effectiveness of Various Riparian Buffer Vegetation Types
- SRL 138 Weed Control with Imazaquin and Pendimethalin around Newly Planted Shrub and Tree Seedlings

Some Contributions of K-State Scientists

- UNN 2002 Report on Grains Research and Educational Programs Supported by Kansas Corn, Grain Sorghum, Soybean, and Wheat Commissions (electronic only)
- DRR 2 2002 Director's Report of Research in Kansas (electronic only)

Suffix Letters

for Contribution Numbers (pages 7-37)

- A** Proceedings of Meeting or Symposium
- B** Book or Chapter for Book
- C** Computer Program
- D** Department Report
- E** Extension Publication (co-authored by a KAES researcher but funded separately or published externally as education material) or research by an employee with an extension appointment to be published in a refereed journal.
- J** Journal
- S** Station Publication: Report of Progress, Keeping Up with Research, Special Publications, and Bulletins
- T** Trade Publication

Categories are based on information received before manuscripts are published. Place of publication sometimes changes later. Numbers are deleted if authors cannot supply publication data.

Station publications are available on the World Wide Web at <http://www.oznet.ksu.edu/library/>. Department Reports are available only from the appropriate department office. Copies of journal articles or other outside publications must be obtained from the authors.

Publications of Station Scientists (By Department and Station Contribution Number)

Agricultural Economics

- 02-144-J Producer Experience, Learning by Doing, and Yield Performance
B.K. Goodwin, A.M. Featherstone, K. Zeuli
American J. of Agricultural Economics 84:660-678, 2002
- 02-419-A Derived Carbon Credit Values for Carbon Sequestration: Do CO₂ Emissions from Production Inputs Matter?
J.R. Williams, R.G. Nelson, T.D. Aller, M.M. Claassen, C.W. Rice
American Agricultural Economics Association Meeting, July 28-31, 2002
- 02-463-J Entrepreneurial Risk-Taking versus Growth Management: The Case of Premier Technology Inc.
G.W. Brester, M.A. Boland
J. Food Distribution Research (Nov. 2003):21-30
- 03-82-D Employee Wage Rates and Compensation Packages on Kansas Farms
S.L. Fogleman, K. Dhuyvetter, T. Kastens, M. Albright
Ag. Econ. Dept. Research Report No. 35:1-24 (Oct. 2002)
(Available through department only)
- 03-138-D A Review of Economic Analyses of Water Policies and Irrigation Issues in the High Plains: 1980-2000
J.M. Peterson, D.J. Bernardo
Agricultural Economics Department Research Report No. 36:1-44 (June 2003)
(Available through department only)
- 03-150-J Nutritional and Economic Implications of Protein Variance and Application of Statistical Process Control in the Chinese Feed Industry
Z. Yan, T.J. Herrman, T. Loughin, A. Featherstone, D. Feng
Cereal Chemistry 80(5):623-626, 2003
- 03-159-J Yield Models Implied by Traditional Fertilizer Recommendations and a Framework for Including Nontraditional Information
T.L. Kastens, J.P. Schmidt, K.C. Dhuyvetter
Soil Science Society of America Journal 67:351-364, 2003
- 03-254-A Risk and Return to Landlords and Tenants from Alternative Leasing Arrangements
R.O. Burton Jr., K.C. Dhuyvetter, T.L. Kastens, J.R. Tajchman
Annual Meeting of the Southern Agricultural Economics Association, Mobile, AL, February 2003
- 03-294-J Determinants of U.S. Direct Foreign Investment in the Caribbean
P. Lall, D.W. Norman, A.M. Featherstone
Applied Economics (35):1485-1496, 2003

- 03-373-D Staff, Programs, and Publications in Agricultural Economics, Kansas State University 2002
D.L. Foster
Agricultural Economics Department Staff Paper No. 03-01:1-47 (May 2003)
(Available through department only)
- 03-408-A Analysis of FARMM and Counter-Cyclical Savings Accounts in Kansas
R.V. Llewelyn, J.R. Williams, B.W. Schurle, M.R. Langemeier
Farm Savings Accounts Workshop, USDA/ERS, Washington, DC, June 2003
- 03-420-D Kansas Farm Management SAS Data Bank
M.R. Langemeier
Agricultural Economics Department Staff Paper No. 03-02:1-112. (June 2003)
(Available through department only)
- 03-430-D KFMA Summary and Analysis
M.R. Langemeier
Agricultural Economics Department Staff Paper No. 03-03:1-20. (June 2003)
(Available through department only)

Agronomy

- 00-207-J Measurement of Change in Soybean Plant Cross-Sectional Area under Wind Conditions via Image Processing
X. Chen, S.M. Welch, N. Zhang, D. Armbrust
Transactions of the American Society of Agricultural Engineers 44:1923-1929, 2001
- 00-246-J Nitrogen Competition in a Tallgrass Prairie Ecosystem Exposed to Elevated Carbon Dioxide
M.A. Williams, C.W. Rice, C.E. Owensby
Soil Science Society of America J. 65:340-346, 2001
- 00-211-J Use of Nontopographic Stereophotogrammetry to Measure Morphological Characteristics of Soybean Plants
X. Chen and S.M. Welch
Transactions of the American Society of Agricultural Engineers 45:407-15, 2002
- 00-499-J Association of Ethylene Dibromide (DB) with Mature Cranberry (*Vaccinium macropocarpus*) Fruit
K. Xia, C.W. Rice
J. Agric. Food Chem. 49:1246-1252, 2001
- 01-57-J Analysis of Resistance to Ergot in Sorghum and Potential Alternative Hosts
J.D. Reed, M.R. Tuinstra, B.A. Ramundo, L.E. Claflin
Crop Science 42:1135-1138, 2002

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- 01-70-J Changes in Ecosystems Structure and Function along a Chronosequence of Grasslands Restored Through the Conservation Reserve Program
S.G. Baer, D.J. Kitchen, J.M. Blair, C.W. Rice
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- 01-77-J Relative Performance of Soybean in End-Trimmed and Plant-to-Length Plots
S.J. Meis, W.T. Schapaugh Jr., G.A. Milliken
Crop Science 42:700-704, 2002
- 01-196-J Sex Pheromone of the Noctuid Moth, *Tyta luctuosa* (Lepidoptera:Noctuidae), a Candidate Biological Control Agent of Field Bindweed
W.-H. Cao, R.E. Charlton, J.R. Nechols, M.J. Horak
Environmental Entomology 32:17-22, 2003
- 01-235-B Drought Resistance
M.B. Kirkham
In: *Encyclopedia of Water Science*, B.A. Stewart and T. Howell, (eds.), Marcel Dekker Inc., New York, pp.173-177, 2003
- 01-291-J Estimating Soybean Model Genetic Coefficients from Private Sector Variety Performance Trial Data
S.M. Welch, G. Wilkerson, K. Whiting, N. Sun, T. Vagts, G. Buol, T. Mavromatis
Transactions of the American Society of Agricultural Engineers 45:1163-1175, 2002
- 01-392-J Soil Quality of Two Kansas Soils as Influenced by Conservation Reserve Program(CRP)
X. Huang, E. Skidmore, G. Tibke
J. Soil and Water Conservation 57:344-350, 2002
- 01-466-J Optimization of Sorghum Transformation Parameters using Genes for Green Fluorescent Protein and B-Glucuronidase as Visual Markers
J.M. Jeoung, S.Krishnaveni, S. Muthukrishnan, H.N.Trick, G.H. Liang
Hereditas 137:20-28, 2002
- 02-20-J Composition and Quality of Wheat Grown under Different Shoot/Root Temperatures during Maturation
M. Guedira, P.J. McCluskey, F. MacRitchie, G.M. Paulsen
Cereal Chemistry 79:397-403, 2002
- 02-51-J Measured and Simulated Uniformity of Low Drift Nozzle Sprinklers
K. Srinivas, D.H. Rogers, R. Stratton, V.L. Martin
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- 02-92-J Wind Erosion from Military Training Lands in Mojave Desert, California,USA
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J. of Arid Environments 54:687-703, 2003
- 02-110-J Correcting Iron Deficiency in Corn with Seed-Row Applied Iron Sulfate
C.G. Godsey, J.P. Schmidt, A.J. Schlegel, R.K. Taylor, C.R. Thompson, R. Gehl
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L. Zhu, M.B. Kirkham
Bioresource Technology 87:7-15, 2003
- 02-155-J Plant Remediation of Soil Beneath an Abandoned Animal Waste Lagoon.
L. Zhu, M.B. Kirkham
J. of Sustainable Agriculture 22:119-133, 2003
- 02-166-J Single Irrigations During Reproductive Growth to Improve Early Maturing Soybean Yield and Quality
D.W. Sweeney, J.H. Long, M.B. Kirkham
Soil Science Society of America J. 67:235-240, 2003
- 02-181-B Soil Erosion and Conservation
E.L. Skidmore, S.J. van Donk
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- 02-183-J Characterization and Functional Properties of Soy B-Conglycinin and Glycinin of Selected Genotypes Grown in Kansas
K.A.Khatib, T.J. Herald, F.M. Aramouni, F. MacRitchie, W.T. Schapaugh
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R.J.Rector, D.L. Regehr, P.L.Barnes T.M.Loughin
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- 02-213-A Can Long Grain-Fill Duration Improve Yield Potential and Grain Quality of Sorghum?
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- 02-223-J Analysis of Combining Ability for Ergot Resistance in Grain Sorghum
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Crop Science 42:1818-1823, 2002

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F. Madrid, M.S. Liphadzi, M.B. Kirkham
J. of Hydrology, 272:107-119, 2003
- 02-261-J Application Timing Impact On Runoff Losses of Atrazine
R.J. Rector, D.L. Regehr, P.L. Barnes, T.M. Loughin, M.A. Hoobler
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- 02-279-J Seeding and Nitrogen Rates Required to Optimize Winter Wheat Yields following Grain Sorghum and Soybean
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- 02-319-A Heavy Metal Uptake by Barley and Sunflower Grown in Abandoned Animal Lagoon Soil
F. Madrid, M.B. Kirkham
Proceedings of the 17th World Congress of Soil Science Bangkok, Thailand, Paper #401, 14-21, August 2002, CD-ROM (pages 401-1 through 401-10)
- 02-327-J Grain Sorghum Response to Simulated Drift from Glufosinate, Glyphosate, Imazethapyr, and Sethoxydim
K. Al-Khatib, M.M. Claassen, P.W. Stahlman, P.W. Geier, D.L. Regehr, S.R. Duncan, W.F. Heer
Weed Technology 17:261-265, 2003
- 02-349-J Phosphorus Bioavailability Following Incorporation of Green Manure Crops
M.A. Cavigelli, S.J. Thien
Soil Science Society of America J. 67(4):1186-1194, 2003
- 02-387-J Absorption of Lead from a Contaminated Soil Treated with Phosphorus and Manganese Oxides by Sprague-Dawley Rats
G.M. Hettiarachchi, G.M. Pierzynski, F.W. Oehme, O. Sonmez, J.A. Ryan
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- 02-419-A Derived Carbon Credit Values for Carbon Sequestration: Do CO₂ Emissions from Production Inputs Matter?
J.R. Williams, R.G. Nelson, T.D. Aller, M.M. Claassen, C.W. Rice
American Agricultural Economics Association Meeting, July 28-31, 2002
- 02-424-J Heterotic Effects of Wheat-Rye Chromosomal Translocations on Agronomic Traits of Hybrid Wheat (*Triticum aestivum* L.) Under Adequate Moisture Regime
J.O. Owuochi, R.G. Sears, G.L. Brown-Guedira, B.S. Gill, A.K. Fritz
Euphytica 132(1):67-77, 2003
- 02-437-J Common Waterhemp (*Amaranthus rudis*) Resistance to Protoporphyrinogen Oxidase (Pro-Tox)-Inhibiting Herbicides
D. Shoup, K. Al-Khatib, D. Peterson
Weed Science 51:145-150, 2003
- 02-441-J Growth and Gas Exchange of Sorghum Grown Under Low Light
Q. Xu, M.B. Kirkham
Photosynthetica 41:27-32, 2003
- 02-492-A How Wind Erosion Processes Affect Selection and Performance of Erosion Control Systems
L.J. Hagen
Proc of ICAR5/GCTE-SEN Joint Conference, International Center of Arid and Semiarid Lands, Texas Tech University, Lubbock, Texas, USA, Publication 02-2, p.317
- 03-3-A Validation of WEPS Erosion Predictions for Single Wind Events
L.J. Hagen
Proc of ICAR5/GCTE-SEN Joint Conference, International Center of Arid and Semiarid Lands Studies, Texas Tech University, Lubbock, Texas, USA, Publication 02-2, p.252
- 03-19-S 2002 Kansas Performance Tests with Winter Wheat Varieties
K. Roozeboom, W.W. Bockus, L. Brooks, M. Knapp, A. Fritz, P. Evans, J. Long, T.J. Martin, A. Schlegel, M. Witt, M. Claassen, W.B. Gordon, W. Heer, K. Janssen, V. Martin
Kans. Agric. Exp. Stn. Report of Progress 896, July 2002, 28 pp.
- 03-24-S 2002 Kansas Performance Tests with Alfalfa Varieties
K. Roozeboom, P. Evans, J. Moyer, M. Witt, W.B. Gordon, W. Heer, L. Maddux
Kans. Agric. Exp. Stn. Report of Progress 904, December 2002, 9pp.
- 03-40-J Using Cone Index Data to Explain in Field Yield Variation
N.E. Isaac, R.K. Taylor, S.A. Staggenborg, M.D. Schrock, D. Leikam
CIGR Ejournal <http://cigr-ejournal.tamu.edu/volume4.html>
- 03-43-J Developing Topographic Maps using an Agricultural Global Positioning Receiver
J.P. Schmidt, R.K. Taylor, R.J. Gehl
Applied Engineering in Agriculture 19(3):291-300, 2003

Publications of Station Scientists

- 03-159-J Developing Appropriate Yield Models and Fertilizer Recommendations Using Site-Specific Information
J.P. Schmidt, T.L. Kastens, K.C. Dhuyvetter
Soil Science Society of America J. 67:351-364, 2003
- 03-160-S 2002 Kansas Performance Tests with Corn Hybrids
K. Roozeboom, D. Jardine, M. Knapp, M. Claassen, W.B. Gordon, W. Heer, K. Janssen, V. Martin, P. Evans, L. Maddux, K. Kofoid, J. Long, A. Schlegel, M. Witt
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- 03-172-J The Teaching Learning Trinity
S.J. Thien
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- 03-181-J Effects of Seed Treatment Fungicides on Stand and Yield of Grain Sorghum, 2002
D.J. Jardine, M. Claassen, B. Gordon, J.H. Long
Fungicide and Nematicide Tests 58:ST006
- 03-182-J Effects of Seed Treatment Fungicides on Stand and Yield of Grain Soybean, 2002
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Fungicide and Nematicide Tests 58: ST005
- 03-193-S 2003 Chemical Weed Control for Field Crops, Pastures, Rangeland and Noncropland
D.L. Regehr, D.E. Peterson, P.D. Ohlenbusch, W.H. Fick, P.W. Stahlman, R.E. Wolf
Kans. Agric. Exp. Stn. Report of Progress 902, December 2002, 96 pp.
- 03-198-S Kansas Fertilizer Research 2002
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<http://www.oznet.ksu.edu/library/crpsl2/SRP903.pdf>
- 03-201-S 2002 Kansas Performance Tests with Grain Sorghum Hybrids
K. Roozeboom, D. Jardine, M. Knapp, M. Claassen, W.B. Gordon, W. Heer, K. Janssen, V. Martin, L. Maddux, P. Evans, K. Kofoid, J. Long, A. Schlegel, M. Witt
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- 03-202-S 2002 Kansas Performance Tests with Soybean Varieties
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- 03-204-J Laboratory Evaluation of the Dual-Probe Heat-Pulse Method for Measuring Soil Water Content
J.M. Basinger, G.J. Kluitenberg, J.M. Ham, J.M. Frank, P.L. Barnes, M.B. Kirkham
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- 03-211-S Kansas Performance Tests with Alfalfa Varieties
K. Roozeboom, P. Evans, J. Moyer, M. Witt, W.B. Gordon, W. Heer, L. Maddux
Kans. Agric. Exp. Stn. Report of Progress 904, December 2002, 9pp.
- 03-211-S Kansas Performance Tests with Alfalfa Varieties
K. Roozeboom, P. Evans, J. Moyer, M. Witt, W.B. Gordon, W. Heer, L. Maddux
Kans. Agric. Exp. Stn. Report of Progress 904, December 2002, 9pp.
- 03-214-D 2002 National Winter Canola Variety Trial
C. Rife, K. Janssen, R. Aiken, J. Long, W. Heer, M. Witt, R. Auld, R. Bacon, D. Baltensperger, U. Bishnoi, H. Bhardwaj, D. Bordovsky, E. Christmas, S. Conley, J. Fisher, R. Freed, Jerry Johnson, Joe Johnson, J. Kelly, J. Klein, R. Kochenower, J. Krall, K. Kusel, K. Larson, L. Nelson, P. Raymer, M. Schmidt, F. Schweissing, R. Smoot, D. Starner
Agronomy Department Report, January 2003, 58 pp. (Available through department only)
- 03-244-S 2002 Kansas Performance Tests with Sunflower Hybrids
P. Evans, K. Roozeboom, M. Claassen, W.B. Gordon, W. Heer, A. Schlegel
Kans. Agric. Exp. Stn. Report of Progress 905, January 2003, 25 pp.
- 03-251-S 2002 Kansas Performance Tests with Summer Annual Forages
K. Roozeboom, W. Heer, P. Evans, K. Kofoid
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- 03-263-S Kansas Performance Tests with Spring Small Grains
K. Roozeboom, P. Evans, W.B. Gordon, K. Janssen
Kans. Agric. Exp. Stn. Report of Progress 907, February 2003, 4 pp.
- 03-301-S A History of Wheat Improvement at Kansas State University
G.M. Paulsen
Kans. Agric. Exp. Stn. Keeping Up with Research 136, March 2003

Publications of Station Scientists

- 03-305-S Assessing the Effectiveness of Various Riparian Buffer Vegetation Types
C.J. Barden, K.R. Mankin, D. Ngandu, W.A. Geyer, D.L. Devlin, K. McVay
Kans. Agric. Exp. Stn. Keeping up with Research 137, March 2003
- 03-307-S Weed Control with Imazaquin and Pendimethalin Around Newly Planted Shrub and Tree Seedlings
W.A. Geyer, W.H. Fick, E. Rhodenbaugh
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- 03-323-S Field Day 2003 Southwest Research-Extension Center,
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Active Projects—FY 2003

Agricultural Experiment Station Director

- 525081 Development and Management of Canola in the Great Plains
 525085 Consortium for Agricultural Soils Mitigation of Greenhouse CASMGS)
 KS9081 Development and Management of Canola in the Great Plains Region

Agricultural Economics

- 520550 Improving Farm Competitiveness: Explaining and Forecasting Farm Profitability
 520512 Estimating the Nationwide Demand for Risk Reduction from Foodborne Pathogens
 536501 KS Cooperative Development Center for Education and Assistance Program
 536778 Kansas Urban Water Quality Restoration and Protection Initiative
 520532 Bioeconomic Assessment of Biologically Based Pest Management on Ivy Geranium
 536832 A Rural Community Based Case Test to Evaluate the Efficacy of the USDA Quality System Certification Program (QSCP) for Small Livestock and Meat Marketing Programs
 520543 USDA Agricultural Marketing Resource Center
 520545 Risk Information and Education for Producers Investing in Value Added Businesses
 520547 Are Equivalent Advertising Assessments Optimal in the Face of Product Differentiation?
 535195 National Food and Agribusiness Challenge Grants Program
 520557 Analysis of Income Variability and Stabilization and Development of Risk Management Tool
 536975 Distance Education Strategies for Agricultural Producers
 520559 The Economics of Wheat Protein and Wheat Gluten
 520562 Welfare Estimates under Product Differentiation: The Benefits of Table Grape Promotion on Grape Varieties
 KS190 Agricultural Water Management Technologies, Institutions and Policies Affecting Economic Viability and Environmental Quality
 KS221 Financing Agriculture and Rural America: Issues of Policy, Structure and Technical Change

- KS2443 Livestock Management and Marketing
 KS502 Agricultural International Trade and Natural Resource Policy Impacts on Kansas
 KS585 Supply Chain Management and Agribusinesses Structures
 KS732 An Industry Targeting and Evaluation System for Kansas Rural Communities
 KS9512 Estimating the Nationwide Demand for Risk Reduction from Foodborne Pathogens
 KS9550 Improving Farm Competition: Explaining and Forecasting Farm Profitability

Agromony

- 535176 Experiential Learning Integrated Across the Curriculum
 536957 Heartland Integrated Water Quality Coordination Initiative
 536910 Revising KSU Sorghum Phosphorus and Potassium Nutrient Recommendations
 520005 Use of Strip-Tillage for Corn Production in Kansas
 536916 Revising KSU Corn Phosphorus and Potassium Nutrient Recommendations
 520980 Flow and Distribution of Fluid Phases through Porous Plant Growth Media in Microgravity
 520979 Enhancing the Utilization of Grain Sorghum and Pearl Millet through the Improvement of Grain Quality via Genetic and Nutrition
 520997 Evaluation of Brassica Napus Accessions to Determine Growth Habit and Vernalization Requirement
 520033 Soil Fertility and Soil Management Investigations
 520044 Range and Pasture Brush and Weed Control
 520052 Field Herbicidal Evaluations
 520713 Development of Hard White Winter Wheat for Kansas
 520756 Foundation Seed Maintenance
 520761 Crop Performance
 520800 Providing Soil Sample Analyses for Soil Survey Activities
 520864 Impact of Golf Courses on Soil Quality
 520887 Wind Erosion Model for Military Lands
 520888 Wind Erosion Assessment and Control
 520890 Addition of Genes Encoding Thaumatin-Like Protein and Late Embryogenesis Abundant Protein
 520904 Canola Production Centers: Introducing a Viable New Crop to Kansas

- 520907 Potential for Imidazolinone-Resistant Sunflower Gene Escape and Altered Fitness of Related Wild Species
 520914 Landscape-Level Trace Gas Fluxes on Grazed and Ungrazed Tallgrass Prairie
 520919 Same as 20914
 520925 Improving Resistance to Preharvest Sprouting in Kansas White Wheat
 536785 Soybean Production in Kansas: Extension and Applied Research
 536786 Grain Sorghum Production in Kansas: Extension and Applied Research
 536787 Corn Production in Kansas: Extension and Applied Research
 520938 Development of Wheat Germplasm with Multiple Disease and Insect Resistance for the Southern Great Plains
 520939 Improvement of Hard Red Winter Wheat for Kansas
 520948 Elucidation of and Development of Cold Tolerance in Sorghum
 520953 Evaluation of Agri-SC for Reducing Soil, Nutrient, and Herbicide Losses in Cropland Runoff
 520965 Enhancing Soybean Germplasm Development
 520966 Sprinkler Irrigation Demonstration Project
 520969 Greenhouse Studies to Demonstrate Zinc Phytotoxicity of Native Plant Species
 520970 Development and Standardization of Methods for Measuring Seepage Rates from Anaerobic Lagoons at Animal Feeding
 520968 Integrated Agricultural Management Systems for Improving Water Quality in Kansas
 520973 Enhancement of Research on Fate and Impact of Environmental Pollutants
 520975 Same as 520973
 520978 Bringing Genomics to the Wheat Fields
 520990 IWM Implementation: A Regional Approach
 520996 Facilitate Development of Abiotic Stress Resistant Wheat
 521013 Grazer-Mycorrhizal Interaction in Tallgrass Prairie: Effects on Carbon and Nitrogen Partitioning and Sequestration
 521006 Quantifying Nitrate Leaching and Improving Current Nitrogen Recommendations for Sandy Soils Under Irrigated Corn
 521014 Implementing Practical and Cost-Effective Approaches to Site-Specific Weed Management

Active Projects—FY 2003

521009 Control of Field Pansy, a "New" Winter Annual in No-Till Crops

521011 A Field Assessment of Methods for Estimation of Groundwater Consumption by Phreatophytes

521012 Evaluation of the Impact of Military Training on Soil

535287 Field Trials V-10126

521027 Soil Laboratory Analysis to Support Soil Properties for Use in Determining How Soils Interpret for Various Uses

537025 Compost Site Operation and Maintenance/Compost Operator School/Education and Technical Assistance

KS032 Ergot: A New Disease of U.S. Grain Sorghum

KS037 Host Plant Control Resistance to and Best Management Practices for Karnal Bunt of Wheat

KS082 Reducing the Potential for Environmental Contamination by Pesticides and Other Organic Chemicals

KS1011 Breeding and Genetics of Forage Crops to Improve Productivity, Quality and Industrial Use

KS188 Characterization of Flow and Transport Processes in Soils at Different Scales

KS202 Biological and Ecological Basis for Weed Management Decision Support Systems to Reduce Herbicide Use

KS218 Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources

KS287 Conservation, Management, Enhancement and Utilization of Plant Genetic Resources

KS507 Calibrating and Validating Wheat and Soybean Crop Models for Kansas Varieties

KS515 Starter Fertilizer Application Effects on Reduced and No-Tillage Grain Sorghum Production

KS523 Starter Fertilizer Formulations and Placement for Conservation Tillage Production Systems

KS525 Improvement of Hard Winter Wheats and Other Small Cereal Grains for Kansas

KS526 Plant Transformation Using Microprojectiles and Agrobacterium

KS533 Crop Growth in Soil beneath Waste Lagoons

KS540 Range Improvement Investigation

KS557 Breeding Sorghum for Improved Yield Potential and Stress Tolerance

KS578 Effects of Long-Term Crop Residue Harvesting and Fertilizer Application on Soil Properties and Crop Yield

KS580 Biomass Sources of Nitrogen for No-Till Rotations for South Central Kansas

KS581 Production of Transgenic Crop Plants for Biotic and Abiotic Stresses

KS582 Enhancing Soybean Production Efficiency and Stability through Breeding and Genetics

KS591 Reduced Tillage and Intensified No-Till Crop Rotations with Winter Wheat and Row Crops

KS610 Use of Crop Models for Summer Crop Management

KS625 Common Waterhemp Resistance to PPO-Inhibiting Herbicides

KS716 Nitrogen Management Strategies to Limit Subsurface Losses in Irrigated Corn Production

KS719 Quantifying Nitrate Leaching and Improving Current Nitrogen Recommendations for Sandy Soils under Irrigated Corn

KS720 Improving Short- and Long-Term Management of Soil Phosphorus and Phosphorus Fertilizers

KS779 Impact Climate and Soils on Crop Selection and Management

KS838 Chemistry and Bioavailability of Waste Constituents in Soils

KS9014 Implementing Practical and Cost-Effective Approaches to Site-Specific Weed Management

KS9085 Consortium for Agricultural Soils Mitigation of Greenhouse Gases (CASMGs)

KS9090 Development and Management of Canola in the Great Plains Region

KS9907 Potential for Imidazolinone-Resistant Sunflower Gene Escape and Altered Fitness of Related Wild Species

KS9931 Evaluation of Post-Control Weed Competitiveness as Input into a Weed Management DSS

KS9949A Sorghum Research

KS9968 Integrated Agricultural Management Systems for Improving Water Quality in Kansas

Anatomy and Physiology

529421 LKS & LKUR in Granulosa Cells Molecular and Functional Diversity of Ovary Ca²⁺ Currents

528619 Porcine Antimicrobial Peptide

528620 Short-Term Training Students in Health Professionals Schools

528622 Bicarbonate Secretion by Human and Porcine Epithelia

528623 Veterinary Research Scholars

KS299 National Animal Genome Research Program

KS584 Gonadotropin Receptor Defects, BST, Cystic Ovaries, and Infertility in Dairy Cattle

KS653 Anatomical, Physiological, and Pharmacological Mechanisms in Health and Disease

KS9612 Porcine Antimicrobial Peptides

KS9619 Same as KS9612

KS9626 Epithelial Sodium Transport Mechanisms and Associated Regulatory Pathways that Affect Bovine Mammary Development, Function, and Involution

Animal Sciences and Industry

521900 Nutritional Influences on Efficiency of Amino Acid Use by Growing Cattle

535183 Interactive Food Safety Training Modules for Distance Learning

521788 Support of Regents Distinguished Professorship in Animal Sciences & Industry

536313 Food and Feed Value-Added Program

536325 North Central Regional Aquaculture Center Extension Project

536826 Improving HACCP Systems for Small Meat and Food Processors in Four Midwest States

521877 Animal Sciences and Industry Food Safety Consortium - KSU

521822 Effectiveness of Cloptilolite as a Suspending Agent in Liquid Feed Supplements

536864 Educational Programs on Food Safety and Irradiation

521891 Flaxseed as Component of Finishing Cattle Diets

521882 Validating *E. coli* O157:H7 in Direct Acidified Beef and Venison Semi-Dry Sausages

521895 Infrared Thermography of Market Hogs as a Predictor of Pork

521899 Effects of Vegetable and Animal Fat Sources on Finishing Cattle Performance, Carcass Characteristics, and Meat Sensory

536926 Value-Added Meats Program for Kansas Companies and Entrepreneurs

521908 Control of *Clostridium perfringens* and *Clostridium botulinum* in Cooked, Ready-to-Eat Meat Products by Chemical during Extended Chilling Process

536965 HACCP Training and Research to Assist Meat Processors with Process Deviations for Lethality and Stabilization

521907 PILOT: Functional FSH Receptor Variants in Bovine Follicles

521909 Influence of Carnichrome on the Energetics of Gestating Sows

521912 Novel Genes Involved in the Molecular Responses of Pigs to the Effects of Endotoxemia

Active Projects—FY 2003

521910 Melengestrol Acetate in Receiving Diets for Feedlot Heifers

521911 Effect of Nutrient Enhanced Foods on Joint Development in 25 to 115 kg Pigs

521913 Pipestone Veterinary Clinic Project

521915 Interactive Effects Between Carnitine and Lysine on Growth Performance of Commercial Finishing Pigs

521917 Efficacy of the Grovac System for Decontamination of Retail Beef Trim-mings: Process Validation against Pathogens & Commercial Shelf-Life Study

521916 Evaluation of Factors Causing "Black Bone" Condition in Packaged Beef Retail Cuts and Ways to Decrease the Incidence

521919 Effect of Nutrient Enhanced Foods on Joint Development in 25 to 115 kg Pigs - Experiment 2

537021 Good Natured Family Farms Chicken Shelf-Life Study

KS026 Reproductive Performance in Domestic Ruminants

KS1006 Methods to Increase Reproductive Efficiency in Cattle

KS1009A Metabolic Relationships in Supply of Nutrients for Lactating Cows

KS1119 Management Systems to Improve the economic and Environmental Sustainability of Dairy Enterprises

KS132 Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation

KS189 Forage Protein Characterization and Utilization for Cattle

KS195 Water Quality Issues in Poultry Production and Processing

KS225 Improved Grazing Systems for Beef Cattle Production

KS2212 Postharvest Food Safety

KS2423 Developing Efficient, Coordinated Swine Production Systems

KS481835 The Effect of a *Salmonella typhimurium* Disease Challenge on Porcine Muscle Growth

KS481836 Dietary Mannan oligosaccharides and Sodium Chlorate in Salmonella-Infected Pigs

KS484 Optimum Use of Harvested Forage Crops for Beef and Dairy Cattle

KS579 Stress Factors of Farm Animals and Their Effects on Performance

KS605 Protein Nutrition of Beef Cattle

KS624 Immunization Strategies to Decrease Reproductive Function in Cattle and Horses

KS645 Genetic Effects on Reproduction in Beef Cattle

KS646 Nutritional Modulation of Reproductive and Immune Function in Horses

KS9900 Nutritional Influences on Efficiency of Amino Acid Use by Growing Cattle

Apparel, Textiles and Interior Design

KS1002 New Technologies for the Utilization of Textile Materials

Biochemistry

527308 Protein Structure and Function

527253 Regulation and Function of Membrane Lipid Hydrolysis in Lipid-Based Signaling of Plants

527274 Regulation of Protein Cross-Linking Reactions for Insect Cuticle

529216 Proteinase Systems in Insect Hemolymph

529275 Role of Ordered Helical Segments in Membrane Proteins

529451 Structure and Function of HSP 100 Proteins

527281 Molecular Genetics of Enzymes and Structural Proteins of Aphid

527285 Characterizing Functions of Multiple Phospholipase Ds in

529461 Protein Kinase C Gamma in the Lens

527296 Protein-protein Interactions Mediated by ADAM 12, a Muscle-Specific Metalloprotease-Disintegrin

527297 A Kirkwood-Buff Approach to Improved Cosolvent Force Fields

527299 Metabolic Profiling of Membrane Lipids and their Compositional Dynamics in Plant Stress Responses

527302 Adhesion Receptors of the Insect Immune System

527311 Establishment of the Lipidomics Research Center at Kansas State University

527313 Protein Cross-Linking Reactions for Insect Cuticle Sclerotization

527307 Generation of Genetically Modified Corn Expressing Insect Chitinase Gene

527309 Protein Structure and Function

527314 Effect of Glucose on Blood Coagulation Factor XII Activation and Enzymatic Activity

527316 9th International Chitin-Chitosan Conference

KS511 Biotechnology Core Facility

KS512 High Field Protein Nuclear Magnetic Resonance Laboratory

KS516 Hemolymph Proteins in Insect Immune Responses

KS567 Structure-Function Relationships in Blood Coagulation Factor XII

KS593 Properties of Nitrogenase Iron Protein Mutants

KS595 Biochemistry of Signaling in the Eye

KS599 Modeling Protein Solvation

KS608 Phytoremediation of Organic Environmental Contaminants

KS614 Function and Regulation of Mammalian Pyruvate Dehydrogenase Complex

KS629 Biochemistry of Genetic Systems: Aphid Salivary Proteins and Enzymes

KS631 Molecular Analysis of Metalloprotease Disintegrin ADAM12

KS633 Structure and Function of AAA Proteins

KS688 Wheat Tissue Specific Gene Promoters

KS9281 Molecular Genetics of Enzymes and Structural Proteins of Aphid Salvia

KS9285 Characterizing Functions of Multiple Phospholipase Ds in Arabidopsis

Biological and Agricultural Engineering

527783 Controlling Pollutants from Animal Waste in the Environment

536914 Mobile Irrigation Lab - Improved Irrigation Efficiency for Corn

536918 Kansas AgrAbility Project

527751 Joint State Atrazine Big Blue River Monitoring Project

527765 Kanopolis Watershed Assessment

536226 Kansas Environmental Leadership Program (KELP)

527775 Performance Evaluation of Wetlands in Northeast Kansas

527782 Development of Calibrations and Procedures for a High Speed Machine Vision Grain Inspection System

536939 Demonstration of BMPs to Avoid Groundwater Pollution from Application of Livestock Manure to Cropland

527788 Performance Evaluations of Wetlands in Northeast Kansas

536938 Technical Assistance to Water Users: K-State Mobile Irrigation Lab

536962 Kansas Water Resources Adult Education

527800 High Plains Aquifer Information Network (HIPLAIN) Year 2

527789 Verdigris River Basin - Fall River Watershed WRAPS (K3-023)

527791 Kinetic Model for *E. coli* Transport through Sand Column

527792 Durability of Pulse Width Modulation (PWM) Valve in Precision Anhydrous Ammonia Application

527793 A Wireless Sensor for Measuring Suspended-Sediment Concentration in Streams

Active Projects—FY 2003

527794	Assessing the Impact of Maneuver Training on NPS and Water	526751	Use of Sandsage Habitat by Lesser Prairie-Chicken in Southwestern Kansas	526825	Ecosystem Responses to Experimental Warming and More Extreme Precipitation Patterns
527795	Fermentation Quality of Sorghum	530222	Role of Baculovirus Expression Factors in Host Range	526829	Kansas Biomedical Research Infrastructure Network [K-BRIN] Star Trainee Award
536993	K2-031 Dairy Nutrient Management Technical Assistance	536513	Outdoor Wildlife Learning Site (Owls)	526827	Kansas Biomedical Research Infrastructure Network [K-BRIN] Star Trainee Award
536994	Environmental Health Handbook Revision	536514	Same as 536513	526834	Enhancing Scab Resistance in Wheat by Overexpressing Wheat and Arabidopsis NPR1
KS1004	Development and Evaluation of TMDL Planning and Assessment Tools and Processes	526765	Acquisition of Five Controlled Environment Chambers for Plant Research	770452	FSML: Construction of Duplex-Unit Housing for Visiting Research at the Konza Prairie Biological Station
KS230	Integrating biophysical Functions of Riparian Systems with Management Practices and Policies	526766	EPA Fellowship Grant	KS1142	Regulation of Photosynthetic Processes
KS2312	Water Conservation and Management in Crop Systems	526769	Optimizing Recovery of Cyclospora H2 - Receptor and Tetraspans as Novel Cancer Therapy Targets	KS517	Generation of a Coupled Enhancer System to Control Gene Expression in Shoot Tissues
KS2332	Environmental Air Quality Issues Associated with Agricultural Operations	526770	Ecosystems in Transition: Causes and Consequences of Dramatic Shifts	KS528	Superantigen Binding to Human HLA Molecules
KS2452	Precision Agriculture Technologies	526771	Systematics and Geographic Relations of Phlox L. (Polemoniaceae)	KS529	Functional Characterization of Anti-Apoptotic IAP Proteins
KS558	Thermal Processing of Wheat Gluten-Water Mixtures for New Uses in Food	526773	Schoolyard LTER: Konza Prairie V: Long-Term Research on Grassland Dynamics and Global Change	KS532	Regulation of Cell Adhesion and Migration of Tetraspans
		526780	Long-Term Postdoctoral Fellowship: Elucidation of Animal Diversity by Comparing <i>Drosophila</i> and <i>Tribolium</i> Wing	KS535	Soil Nutrient Availability and Plant Response in Native and Restored Tallgrass Prairie
		526781	Lipid Signaling and NPR1-Independent Pathway in Plant Defense	KS536	Management of Konza Prairie Research Area
		526783	Develop an On-Line Mammal Atlas for Kansas	KS537	Water Quality in the Flinthills
		526785	Scaling Up the Ecosystem Consequences of Forest Expansion in the Great Plains Region	KS538	Conservation and Management of Mammals in Natural and Anthropogenic Ecosystems
		526786	Development of Aquatic GAP Analysis for Kansas	KS539	Salicylic Acid Signaling: Target for Engineering Enhanced Disease Resistance
		526790	Characterization of Insect Rpr, Hid, and Grim Homologs	KS542	Protein Level Regulation of Glutamine Synthetase in Common Beans
		526792	Nitrate Uptake and Retention in Streams: Mechanisms and Effects of Human Disturbances from Stream Reaches to	KS546	Effects of Native and Domesticated Grazers on Belowground Processes in Prairie Ecosystems
		526795	Kansas Biomedical Research Infrastructure Network (K-BRIN)	KS568	Quantitative and Qualitative Analysis of Adipose Tissue from Avian Wildlife
		526801	Kansas Biomedical Research Infrastructure Network (K-BRIN)	KS569	Gene Sequences of <i>Cryptosporidium parvum</i>
		526807	Fluorescence Spectrophotometer with Microtiter Plate Reading	KS615	Engineering Systemic Acquired Resistance in Wheat
		526808	Control of Translation Initiation in Fission Yeast	KS620	Comparison of Sources of Fecal Contamination in Water: Antibiotic Resistance Versus Biolog Patterns
		526810	Enterococcus faecalis Protein EbsG and LTA Function	KS621	Herbarium-Based Studies in Plant Systematics
		526811	Effectiveness of Nanoparticles for Treatment of Mycelia and	KS627	The National Atmospheric Deposition Program: Konza Prairie, Kansas
		526815	Belowground Meristem Populations as Regulators of Grassland Dynamics	KS697	Molecular Genetics of Plant-Aphid Interaction
		526816	Research Fellowship	KS9184	Role of Baculovirus Expression Factors in Host Range
		526817	Analysis of CD81-PGRL Complex on T Cells		
		526818	REU Site: Conservation of the Tallgrass Prairie Ecosystems		

Biology

529501	Genetic Control of Segmentation
529521	In vitro Refinements for <i>Cryptosporidium parvum</i>
526814	Diversity of Ericoid Mycorrhizal Fungi and Its Significance in Plant Nitrogen Acquisition in the Arctic
526804	Konza Prairie LTER V: Long-Term Research on Grassland
526812	Genomic Approaches to Study Organismal Response to Global Environmental Change
526583	Establishment and Operation of the Kansas Cooperative Fish and Wildlife Research Unit
526656	REU in Grassland Ecology at Konza Prairie Research Natural Area
526684	Long-Term Ecological Research in Tallgrass Prairie: Konza LTER Program
526737	Testing of Water Filter and Purification Devices
526741	Differentiation of Bone Marrow Macrophages in Space: Phase A
526746	Genetic Regulation of Developmental Fate / Evolution of Genetic Mechanisms Controlling Developmental Fate
526748	Grassland Ecosystem Response to the Experimental Manipulation of Precipitation
526749	Belowground Responses to Manipulation of Precipitation Timing and Amounts in a Grassland
526750	Acquisition of an Isotope Ratio Mass Spectrometer in the KSU-KU-Creighton University Consortium

Active Projects—FY 2003

- KS9743 Grassland Ecosystem Response to the Experimental Manipulation of Precipitation
- KS9783 Lipid Signaling and NPR1-Independent Pathway in Plant Defenses

Chemical Engineering

- 527908 USDA/ARS Research Support Agreement
- KS543 Carbon Adsorbents and Molecular Sieves for Gas Storage and Fluid Purification
- KS602 Process Synthesis for Downstream Processing in Production of Butanol from Corn and Grain Sorghum

Civil Engineering

- KS489 Containment Barriers for Agricultural Waste
- KS554 Binding of Pesticides to Soils and Its Impact on Bioavailability
- KS616 Environmental Fate of Pharmaceuticals in Animal Wastes

Communications

- 520007 Food Safety Education for the Prevention of Foodborne Illness among U.S. Residents 65 and Older
- 537661 Radio Community Service Grant
- 536722 Bugs in Kansas Book
- 536837 CYFERNet Technology
- 536900 Technical Assistance to Water Users: ET/Weather Station Operation and Maintenance
- KS9007 Food Safety Education for the Prevention of Foodborne Illness among U.S. Residents 65 and Older

Diagnostic Medicine / Pathobiology

- 528432 Correlation of CD151 Levels in Peripheral Blood Monocyte Cells with Porcine Reproductive and Respiratory Syndrome Virus
- 528414 Studies of the Safety of Fiber AB Product in Household Pets
- 528416 Fabric Refresher #2
- 528418 Role of Glycoproteins gE and gI in BHV-1 and BHV-5 Differential Neuro-pathogenesis
- 528422 Pseudorabies Laboratory Testing

- 528424 Effect of Lasalocid on Experimentally Induced Abomasal Bloat and Abomasitis in Neonatal Calves
- 528427 Role of *Fusobacterium necrophorum* Leukotoxin in Virulence
- 528428 An Improved Multiplex Molecular Test for Sensitive Detection of Canine Ehrlichiosis Agents
- 528431 Thrombin and vWF in Shiga-Toxin Associated HUS
- 528437 Development of an Upper Respiratory Tract Infection Model in Adult Dogs by Experimental Infection with Bordetella
- 528438 Antibiotic Detection and Resistance in Feedlot Management: A Preliminary Research, Demonstration and Education Project
- 528439 Assessment of Tilmicosin Mutation Frequency in Cattle Respiratory Disease Pathogens
- 528441 Intergovernmental Personnel Act Assignment
- 528443 Realtime PCR Detection of PRRSV and Rapid Identification of Vaccine in Serum and Semen
- 529484 Control of Enterotoxin Gene Expression in *S. aureus*
- 529511 Cellular Immunity against *Ehrlichia chaffeensis*
- KS1007A Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety
- KS107 Evolving Pathogens, Targeted Sequences, and Strategies for Control of Bovine Respiratory Disease
- KS229 Porcine Reproductive and Respiratory Syndrome: Mechanisms of Disease and Methods of the Detection Protection and Elimination of PRRS Virus
- KS481837 Identification of T Cell Epitopes in *Cryptosporidium parvum* Sporozoite p23.
- KS481838 Modulation of Host Immune Response by Tick Feeding and Pathogen Transmission, A Model Study
- KS481839 Role of Shipping Stress in the Acquisition of Resistance Genes by Salmonella in Swine
- KS531 Role of BHV-1 and BHV-5 Glycoproteins in Pathogenesis
- KS644 Control of Animal Parasites in Sustainable Agricultural Systems
- KS655 Diagnostic Pathogenesis and Epidemiology of Livestock and Poultry Diseases
- KS831 Bovine Respiratory Diseases: Risk Factors, Pathogens, Diagnosis and Management

- KS9418 Role of Glycoproteins gE and gI in BHV-1 and BHV-5 Differential Neuro-pathogenesis
- KS9427 Role of *Fusobacterium necrophorum* Leukotoxin in Virulence

Entomology

- 520103 Chemical Control of Insect Pests of Corn and other Field Crops, Small Grains, and Forages
- 520342 Insecticide Management of Field Crop Insects at Hays, Kansas
- 520347 Insecticide Management of Field Crop Insects in Southwestern Kansas
- 522317 Insect Genetics
- 522396 Tougaloo College Project
- 522407 Facilitate Multiple Pest Resistant Wheat Germplasm Research
- 522425 Investigation of Adult Male Gypsy Moth Dispersal Behavior
- 522477 Effect of Timing and Number of Insecticide Applications Sunflower Headmoth Control in Kansas
- 522483 Alternative Pest Management for Greenhouse Bedding Plants: Demonstration and Economic Evaluation at a Commercial Level
- 522485 Systematics of Native and Exotic Species of Eretmocerus
- 522429 Phylogenetics of Termites
- 522443 Consortium for Integrated Management of Stored Product Insect
- 522446 Bioeconomic Assessment of Biologically Based Pest Management on Ivy Geranium
- 522449 Determine Physiological Effects of Insect Growth Regulators for Major Pest Species
- 522456 Kansas Pesticide Usage Survey and Crop Profile Development
- 522461 Biological Control of Stored Product Insects Pests
- 522464 Heliiothis virescens: Model for Signal Transduction of Allatropism in Moths
- 522466 Development of a Corn Rootworm Area Wide Management Program in Kansas
- 522472 Biologically Intensive Area-wide IPM of the Russian Wheat Aphid and Greenbug
- 522471 Efficacy of Lead Transgenic Corn Rootworm Event Against Western and Northern Corn Rootworm
- 522478 Dow Field Trials Project
- 522479 Management of the Soybean Aphid: A Pro-Active Approach to a New Pest
- 522480 West Nile Virus Surveillance in the State of Kansas

Active Projects—FY 2003

522481 Biology and Management of the Soybean Stem Borer in Kansas

522486 Soybean Resistance to the Soybean Aphid

522487 Predicting the Durability of Host Resistance and Hessian Fly

522510 Mechanisms of Pesticide Interactions in Aquatic Organisms: Implications to Watershed Contamination and Ecosystem Health

522488 Impact Assessment of Stem-boring Insects in Sunflower: A Pilot

522489 Development of RIDL-based Pink Bollworm

522491 Microbial and Population Ecology of House Flies

522496 Lepidopteran Insect Control

522500 Improving the F2 Screen for European Corn Borer

522503 DNA Fingerprinting of *Tribolium Castaneum* for Tracking

536901 Enhancing Information Exchange Through a User-Friendly Diagnostic Image Library

KS045 Mechanisms and Mitigation of Agrochemical Impacts on Human and Environmental Health

KS1005 Sources, Dispersal and Management of Stable Flies on Grazing Beef and Dairy Cattle

KS1010 Dynamic Soybean Pest Management for Evolving Agricultural Technologies and Cropping Systems

KS1185 Biological Control in Pest Management Systems of Plants

KS205 Ecology and Management of European Corn Borer and Other Stalk- Boring Lepidoptera

KS490 Biological Control of Weeds in Kansas

KS534 Physiology of Flight in Insects

KS544 Physiology of Reproduction in Moths and Butterflies

KS559 Studies on Synergistic Toxicity of Pesticide Mixtures to Aquatic Invertebrates

KS583 Insect Systematics: Research, Extension, and Service

KS626 Management of Corn, Sorghum, Sunflower and Wheat Arthropod Pests

KS634 Phylogenetics and Population Genetics of Insects

KS687 Functional Genomics of DN4 and DN6 Genes Expressing Russian Wheat Aphid Resistance

KS9443 Consortium for Integrated Management of Stored Product Insect Pests

KS9464 *Heliothis virescens*: Model for Signal Transduction of Allatotropism in Moths

KS9475 Alternative Pest Management for Greenhouse Bedding Plants: Demonstration and Economic Evaluation at a Commercial Level

KS9487 Predicting the Durability of Host Resistance and Hessian Fly Virulence

Family Studies and Human Services

528050 Evaluation of PATH Intergenerational Program

536495 Expanding Access to USDA and Land-Grant Universities Child Care Information, Programs and Services

536751 NNCC Internet Web Site and Database Recruitment for Air Force Internships Pilot Project

536753 CYFAR Supported Extension Staff Training / Development

536823 Implementing the CES Extension CARES Initiative

536869 Healthy Indoor Air for Kansas Homes

536889 PATH Intergenerational Project

536943 Extension CARES for America's Children and Youth

536982 Kansas Saves: Build Wealth Not Debt, Look Before You Leap

KS552 Kansas Marriage Preservation Project: Enhancing Marriages and Communities in Rural Kansas

Food and Feed Grain Institute

525222 White Wheat Commercialization in Export Markets

Food Animal Health and Management Center

528795 Ecology of *E. coli O157:H7* in Beef Cow-Calf Operations from Ranch through Feedlot

528436 Rapid Syndromic Validation Program – Animals

KS2211 Production Food Safety and Security

KS604 Pre-harvest Control of *E. coli O157:H7* in Cattle

KS654 Medical, Surgical, and Pathophysiological Aspects of Animal Disease

KS9795 Ecology of *E. coli O157:H7* in Beef Cow-Calf Operations from Ranch through Feedlot

Food Science Institute

KS590 Meat Quality and Safety

KS9877 Animal Sciences and Industry Food Safety Consortium

KS9882 Validating *E. coli O157:H7* in Direct Acidified Beef and Venison Semi-Dry Sausages

Grain Science & Industry

523011 International Grains Program (IGP) Advisory Board

523067 Quality Evaluation from KAES Wheat Breeding Programs

523071 Protein/Hardness Screening of Early Progeny Wheats

523080 Development of Prediction Models for Wheat Quality Parameters

523088 A Continuation of Development of a Stored Wheat Areawide Management Program in Kansas

523098 International Grains Program Support Project

523104 Characterization of the Wheat Polyphenol Oxidase (PPO) Gene(s)

523110 Isolation and Evaluation of Wheat Serine Protease Inhibitors as Biopesticides and Modifiers

523112 Affordable Resins and Adhesives from Optimized Soybean Varieties

523113 Efficacy of Actellic on Sunflower Seeds

523119 Molecular Factors Involved in Determining Wheat Flour and Dough Quality

523125 Tyrosine Crosslinks: Kernel Development and Environmental

523128 Market Development Grant—International Grains Program

523129 Development and Implementation of a Voluntary HACCP Program for the Commercial Feed Industry

523130 Characterization of Spinosad as a Stored Grain and Stored Products Protectant

523134 Characterization of Protein-Based Adhesive Performances for Fiber Cardboard

523138 Correlation of Dough Formation and Breadmaking Quality Parameters to Tyrosine Crosslink Formation under Industry

523139 Mold-Induced Deterioration in Grain Stored under High Temperatures and Effect of Mold Inhibitors

523142 Food-Grade Corn Hybrid Evaluation

523143 High-Strength Degradable Plastic from Starch and Poly(lactic acid)

Active Projects—FY 2003

528186	Accuracy of Descriptor Categories for Portion Size Estimation in Dietary Recalls			524660	Facilitate Multiple Stress Resistant Wheat and Alfalfa Germplasm
536759	USDA/Army School-Age and Teen Project	520199	Soybean Foliar Fungicide and Seed Treatment Tests	524662	Characterization of the Pathogenicity Protein AvrXa7
536835	Improving Food Stamp Program use Among Rural Older Adults: a Partnership for Research and Results	520201	Evaluations and Testing of Fungicides and Nematicides on Horticultural Crops	524689	General Resistance Mediated by Aradopsis NHO Genes and Pseudomonas Virulence
536886	Stage-Based Intervention to Increase Fruit and Vegetable Intakes of Young Adults	520202	Seed Treatment	524690	Major Expansion of Qgene, a Popular Genomic Software Package
536922	Community Approach to Obesity Prevention	524475	Non-Conventional Plant Improvement Technology	524691	Agroecology and Biotechnology of Fungal Pathogens of Sorghum and Millet
536935	Validation of an Instrument to Measure Competent Eating	524478	Fusarium Research	524692	Agroecology and Biotechnology of Fungal Pathogens of Sorghum and Millet
536967	Shawnee County Body Mass Index Profile	524492	Wheat Genetics Resource Center and its Contributions to the Kansas Wheat Industry	524694	Activation-Tagged and Deletion Mutants and cDNA Microarrays for Functional Genomics of Rice & (REU Supplement)
537024	KACAP Community Food and Nutrition 2003-04 Project	524502	Winter Wheat Seed Treatment Tests	524698	Wheat Genetics Resource Center at Kansas State University
KS1003	Nutrient Bioavailability Phytonutrients and Beyond	524637	Rice Deletion Mutants for Dissection of Quantitative Resistance	524699	Managing Lands for Both Reduced Wheat Streak Mosaic Virus and Benefits to Wildlife and the Environment
KS1167	N-3 Polyunsaturated Fatty Acids and Human Health and Disease	524649	Structure and Function of the Expressed Portion of the Wheat Functional and Comparative Genomics of NBS-LRR Encoding	524702	Better Understanding and Further Utilization of Genes for Wheat Scab Resistance
KS219	Using Stages of Change Model to Promote Consumption of Grains, Vegetables and Fruits by Young Adults	524651	Functional and Comparative Genomics of NBS-LRR Encoding	524706	Wheat Improvement through Genetic Engineering
KS530	Estrogen Replacement and Dietary Phytoestrogens: Effects on Nutritional Status of Lipid-Soluble Vitamins	524652	Microsatellite Marker Development and Construction of a Microsatellite Size Database	524709	Expression of Phenylalanine-free Zein Protein in Transgenic Soybean as a Value-added Trait for PKU Patients
KS606	Macular Disease in an Elderly Kansas Population	524672	Assessment of the Insular Organization of the Wheat D Genome by Physical Mapping	524713	Plant Diagnostic Center Laboratories for Plant Disease and Pest Diagnosis and Surveillance
KS9168	Role of Vitamin A in Lung Epithelial Cell Repair	524673	Functional Genomics of the Interactions of Tomato and Pseudomonas Syringe pv Tomato DC3000	524716	Development and Characterization of Genetic Mutants in Durum and Common Wheat Collaborative Research: Effects of Environmental Variation on Plant Disease in the Tallgrass Prairie
KS9181	Accuracy of Descriptor Categories for Portion Size Estimation in Dietary Recalls	524678	Molecular Characterization of Novel Rp1 Genes	524718	Investigation of the Mechanisms by which the Hemibiotrophic Rice Blast Fungus Delivers Effector Proteins into Plant Cells
		524679	Mutational Analysis of a Gametocidal Gene, Gc2 of Wheat	524720	Facilitate Development of Wheat Germplasm Resistant to Fusarium Head Blight via Marker Assisted Breeding
		524680	Development of Barley Yellow Dwarf-Resistant Wheat Cultivars for Structural Approaches for Control of Microbial Pathogens	524721	The Genetic Mapping of Aggressiveness and Fertility Barriers in <i>Gibberella zeae</i>
		524697	Collaborative Research: Effects of Environmental Variation on Plant Disease in the Tallgrass Prairie & REU Supplement	524723	Diversity of North and South American and Korean Populations of <i>Gibberella zeae</i>
		524703	Expression of Phenylalanine-free Zein Protein in Transgenic Soybean as a Value-Added Trait for PKU Patients	524724	Isolation of Maize Genes Controlling Defense Reactions to Pathogens of other Cereals
		524709	Functional Analysis of the Avr-Pita Rice Blast Avirulence Protein in Pathogenicity and Host Specificity	524727	Facilitate Development of New Molecular Markers for Wheat Diversity in Fusarium Species in Cereals from West Africa
		524717	Genomic Analysis and Cloning of the Disease Resistance Gene		
		524719	Enhancement of Soybean through Genetic Engineering		
		524726	Molecular Characterization of Rearrangement and Recombination Hot Spots in Maize, Sorghum and Pearl Millet		
		524750	Development of Scab Resistant Wheat Cultivars for Kansas		
		524653			

K-CARE

525445	Green Topeka: Tree-Based Buffer Planning in the Shunganunga Creek Watershed
525459	FY 2003 Kansas Water Resources Research Institute
527784	Air Quality: Odor, Dust, and Gaseous Emissions from Concentrated Animal Feeding Operations in the Southern Great Plains
536797	Watershed Specialist Initiative
536801	Planning Workshop for the Leadership Team of the Animal Waste Initiative
536819	Abatement of Fecal Coliform Bacteria
536821	Waste Management Water Quality Protection Learning Center
536904	Nutrient Placement and Movement in No-Till Cropping Systems for Protecting Groundwater Water Quality
536906	Water Quality Protection from Nitrogen Using Subsurface Drip Irrigation

Active Projects—FY 2003

524732 Cereals Comparative Genomics Initiative Grants Program

524738 International: U.S. Japan Seminar on Genomic and Genetic Analysis of Plant Parasitism and Defense

524743 Limiting Losses to Phytophthora Sojae in the North Central Region

524751 Plant Diagnostic Laboratories for Plant Disease and Pest Diagnosis and Surveillance

524757 Managing Frogeye Leaf Spot and Charcoal Rot in the North Central Region

527786 Development of Model Study on Ethanol and Lactic Acid

536808 Integrated Pest Management

KS215 Overwinter Survival of Heterodera, Pratylenchus and Associated Nematodes in the North Central Region

KS2453 Plant Biotechnology

KS545 Analysis of the Roles of Viral and Host Proteins in Virus Movement in Plants

KS601 Genetics and Physiology of Fusarium SSP

KS609 Chromosome Engineering and Wheat Improvement

KS689 Polyploidy, Intergenomic Interactions, and Gene Dosage in Wheat Gene Expression

KS698 Search for Resistance Genes in Rice that Correspond to Avirulence Genes in the Wheat Take-All Fungus

KS699 Soybean Cyst Nematode Control through Novel Genetic Engineering Approach

KS923 Biocontrol of Soilborne Plant Pathogens

KS9600B Wheat Genetics Resource Center at Kansas State University

KS9637 Rice Deletion Mutants for Dissection of Quantitative Resistance

KS9662 Characterization of the Pathogenicity Proteins AvrXa7

KS9661 Isolation of Maize Genes Controlling Defense Reactions to Pathogens of Other Cereals

KS9679 Mutational Analysis of a Gametocidal Gene, Gc2 of Wheat

KS9689 General Resistance Mediated by Arabidopsis NHO Genes and Pseudomonas Virulence

KS9698 Wheat Genetics Resource Center at Kansas State University

KS9699 Managing Lands for Both Reduced Wheat Streak Mosaic Virus and Benefits to Wildlife and the Environment

KS9709 Expression of Phenylalanine-free Zein Protein in Transgenic Soybean as a Value-Added Trait for PKU Patients

KS9717 Functional Analysis of the AVR-Pita Rice Blast Avirulence Protein in Pathogenicity and Host Specificity

KS9719 Genomic Analysis and Cloning of the Disease Resistance Gene Xa7

KS9724 Isolation of Maize Genes Controlling Defense Reactions to Pathogens of Other Cereals

KS9733 Innate Immunity in Arabidopsis

Sociology, Anthropology, and Social Work

527628 Agriculture in the Internet Economy

527630 SGER: Collaborative Research: The Internet and the U.S. Agricultural System

KS1012 Sustaining Local Food Systems in a Globalizing Environment Forces, Responses, Impacts

KS296 Rural Labor Markets: Workers, Firms and Communities in Transition

Statistics

527616 Collaborative Research: Testing for Marginal Independence between Two or More Multiple Response Categorical Variables

Agricultural Research Center—Hays

525971 Weed Research

525984 Hays Research Center Beef Research

525986 Crop Culture

526004 Kansas Dual Purpose Pest Resistant White Wheats

526011 Integrated Management Systems for Jointed Goatgrass Control in the Central Great Plains

526016 Regeneration of Sorghum Accessions

526017 Integrated Management Systems for Jointed Goatgrass in the Central Great Plains

526024 Same as 526017

526025 Clearfield Winter Wheat Risk Assessment

526029 Risk and Management of Clearfield Winter Wheat

526032 National Jointed Goatgrass Extension Coordinator

526034 HAYRC Sorghum Research - Plot Combine

526035 National Jointed Goatgrass Exten-

sion Coordinator (Part 2)

526036 Clearfield Winter Wheat Risk Assessment (Part 2)

526037 Integrated Management Systems for Jointed Goatgrass in the Central Great Plains

526038 Longspine Sandbur Interference and Control in Sunflower

KS521 Weed Management Investigations in Agronomic Crops

KS524 Genetic Improvement of Wheat

KS561 Complementary Forages in Beef-Cattle Production Systems

KS562 Precision Management of Feedlot Cattle

KS565 Dryland Soil Management and Crop Production

KS594 Pathogen-Host Investigations of Viruses Infecting Wheat and Sorghum

KS847 Forestry Investigations in The Great Plains of Kansas

Northwest Research-Extension Center

525782 Reducing Irrigation Water Needs with High Frequency, Limited Subsurface Drip Irrigation

520365 Sunflower Performance Testing Program

525766 Crops Research

525776 Water Conservation — Increased Efficiency in Usage

525778 Strategies for the Management of the Sunflower Stem Weevil

525779 Quantifying Heat and Water Stress Impacts on Yield and Water Use for Oilseed Sunflower Crops

KS094 Micro-Irrigation Technologies for Protection of Natural Resources and Optimum Production

KS570 Managing Transpiration Efficiency: Productivity and Stability in Semi-Arid Crop Systems

KS628 Improved Spatial and Temporal Management of Advanced Irrigation Systems

KS9776 Water Conservation-Increased Efficiency in Usage

Active Projects—FY 2003

Southeast Agricultural Research Center

526367	Soil Fertility and Management Investigations in Southeastern Kansas
526416	Soybean Research in Southeast Kansas
526420	Southeast Kansas Crop Performance Testing Program
KS527	Forage Utilization by Beef Cattle in Southeastern Kansas
KS560	Forage Cultivars and Production Systems for Southeastern Kansas
KS566	Soil and Water Management Alternatives for Crops in Southeastern Kansas
KS592	Evaluation of Cropping Systems for Southeastern Kansas
KS597	Southeast Kansas Soybean Production and Management

Southwest Research-Extension Center

526151	Weed Control Research in Southwest Kansas
526155	Soil Fertility and Soil Management Research for Western Kansas
526156	Yield Appraisal of Crops for Southwest Kansas
-526202	Compatibility of Intensified Cropping Systems & Wildlife Habitat in Western Kansas
526203	Irrigated Cropping Systems to Reduce Irrigation Water Use and Groundwater Depletion While Sustaining Profitability
526204	Alleviation of Soil Compaction in Dryland Cropping Systems
526208	Irrigated Cropping Systems to Reduce Groundwater Depletion while Sustaining Profitability
526209	Irrigated Cropping Systems to Reduce Groundwater while Sustaining Profitability
526211	Irrigated Cropping Systems to Reduce Groundwater Depletion while Sustaining Profitability
526212	Water Savings from Crop Residues in Irrigated Soybeans
KS481	Water Management for Increased Water-Use-Efficiency in Southwest Kansas
KS519	Cropping Systems for Southwest Kansas
KS522	Developing Weed Management Systems for Southwest Kansas

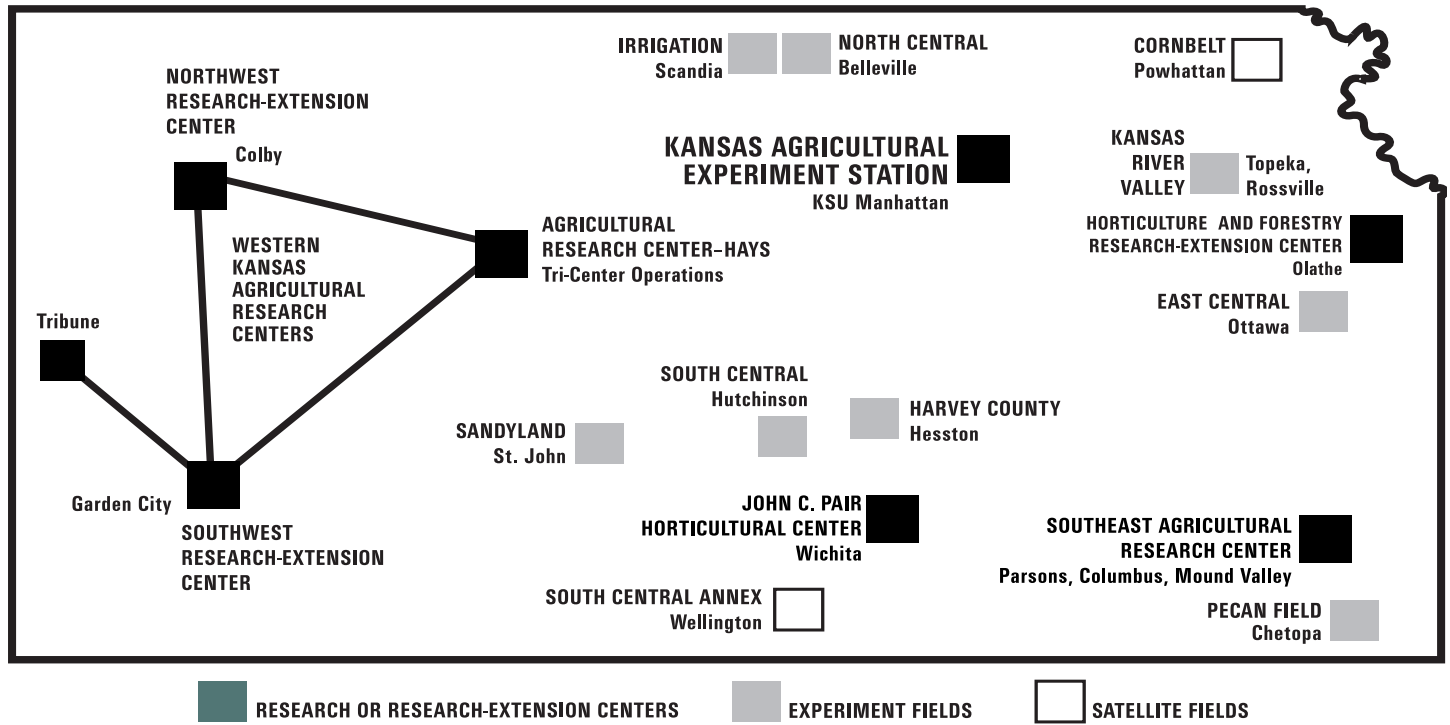
KS617	Investigating Environmental Issues related to Agriculture in Southwest Kansas
KS717	Determination of Nitrate Leaching Following Land Application of Animal Wastes
KS718	Nitrogen Management for No-Till Dryland Corn in Western Kansas

FY2003 Kansas Agricultural Experiment Station Income and Disbursement Statement

FY2003 Expenditures	Federal	State	Fees	Sponsors	Total	Percent
Faculty and Administrative Salary	\$2,228,709	\$19,427,144	\$1,093,972	\$9,330,245	\$32,080,070	54.74%
Classified and Student Salary	\$280,711	\$5,822,131	\$1,156,648	\$1,089,275	\$8,348,765	14.25%
Services, Material and Equipment	\$792,178	\$2,953,096	\$7,441,858	\$6,986,457	\$18,173,589	31.01%
Totals	\$3,301,598	\$28,202,371	\$9,692,478	\$17,405,977	\$58,602,424	100%



Kansas State University Statewide Agricultural Research Services



Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan, Kansas 66506

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