

2002



# 2002 Director's Report of Research in Kansas

July 1, 2001 to June 30, 2002  
Agricultural Experiment Station  
Kansas State University



 **KSTATE**  
Kansas State University

# ***Letter of Transmittal***

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*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, 2002. 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 2002 fiscal year. The report was published only in electronic format.

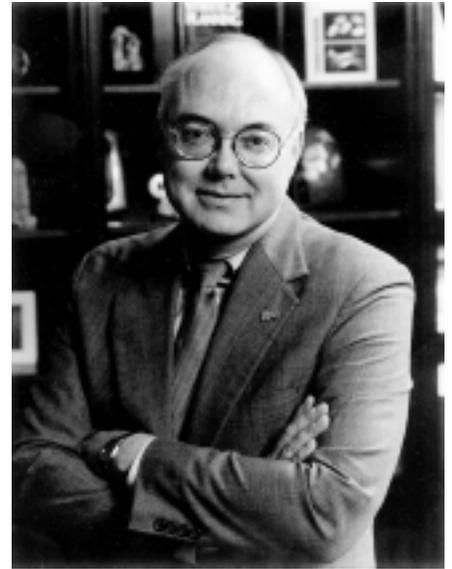
*Marc A. Johnson, Director*

## ***A Message from the Director***

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We are pleased to provide this 2002 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 2002. Agriculture continues to be vitally important to Kansans, and research is vital to maintaining Kansas' place as a leader in agriculture.

This and future issues will be 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. More detailed information about the accomplishments of our research programs are available in the 2002 Annual Report for K-State Research and Extension, which is available on our Web site ([www.oznet.ksu.edu](http://www.oznet.ksu.edu)); under Quick Search, insert "2002 Annual Report" ).



The 2002 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.

A handwritten signature in black ink, appearing to read "Marc A. Johnson".

Marc A. Johnson  
Dean and Director  
Agricultural Experiment Station

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To minimize irrelevant items when searching for common names such as Smith or Martin, turn to the page for the scientist's department (or use the department's bookmark) to start your search.

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

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## **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. 51)**

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 879 2001 Kansas Performance Tests with Winter Wheat Varieties
- SRP 880 Swine Day 2001
- SRP 881 Dairy Day 2001
- SRP 882 2001 Kansas Performance Tests with Corn Hybrids
- SRP 883 2001 Kansas Performance Tests with Grain Sorghum Hybrids
- SRP 884 2002 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland
- SRP 885 Kansas Fertilizer Research 2001
- SRP 886 2001 Kansas Performance Tests with Soybean Varieties
- SRP 887 2001 Kansas Performance Tests with Alfalfa Varieties
- SRP 888 2001 Kansas Performance Tests with Sunflower Hybrids
- SRP 889 2001 Kansas Performance Tests with Summer Annual Forages
- SRP 890 2002 Cattlemen's Day
- SRP 891 Roundup 2002: Agricultural Research Center – Hays
- SRP 892 2002 Agricultural Research Southeast Agricultural Research Center
- SRP 893 Field Research 2002: Agronomy Experiment Fields
- SRP 894 2002 Turfgrass Research
- SRP 895 Field Day 2002: Southwest Research-Extension Center

## Keeping Up With Research

- SRL 132 Acronyms Used in Agricultural Literature
- SRL 133 Planting Date Effects on Tiller Development and Productivity of Wheat
- SRL 134 Relationship Between Tillering and Grain Yield of Kansas Wheat Varieties
- SRL 135 Synthetic Weed Barrier Mulches for Promoting Survival and Growth of Tree Seedlings

## Other

- Some Contributions of K-State Agronomists
- 2001 National Winter Canola Variety Trial
- 2001 Report on Grains Research and Educational Programs Supported by Kansas Corn, Grain Sorghum, Soybean, and Wheat Commissions
- DRR 1 2001 Director's Report of Research in Kansas (electronic only)

## Suffix Letters

### for Contribution Numbers (pages 7-40)

- 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**

- 98-122-J Efficiency Measures of, and On-Farm Research for Southern Senegal Subsistence Farmers  
S. Sall, C. Guvele, A. Featherstone, D. Norman  
In: *Food Security, Diversification and Resource Management: Refocusing the Role of Agriculture?*  
G.H. Peters, and Joachim Von Braun (eds.).  
Ashgate Publishing Limited, Aldershot, England, 650-651, 1999
- 98-433-B Systems Research and Technical Change  
D.W. Norman, P.J. Matlon  
In: *Research on Agricultural Production Systems: Perspectives and Methods.*  
E. Crawford and J.P. Collins (eds.).  
Nova Science Publishers, 19-47, 2000
- 99-178-J The Use of Winter Annual Cover Crops in a Wheat-Grain Sorghum Rotation in South Central Kansas  
R.R. Janke, M.M. Claassen, W.F. Heer, J. Jost, S. Freyenberger, D. Norman  
J. Sustainable Agric. 20(2):69-88, 2002
- 99-368-J Use of a Simulation Model to Evaluate Wheat Segregation Strategies for Country Elevators  
S. Baker, M.A. Boland, T.J. Herrman  
Applied Engineering in Ag. 18(1):105-112, 2002
- 00-163-A Directions and Approach to Technology Transfer/Dissemination Appropriate to Traditional Farming Systems  
D.W. Norman  
Proc. Reg. Workshop on Improv. Trad. Farming Syst. for S. Pacific Countries. Inst. for Res., Ext., and Training in Agric., Univ. S. Pacific, Apia, Samoa, October 18-22, 1999
- 00-164-A Role of the Farming Systems Approach to Development (FSD) in the Improvement of Traditional Farming Systems  
D.W. Norman  
Proc. Reg. Workshop on Improv. Trad. Farming Syst. for S. Pacific Countries. Inst. for Res., Ext., and Training in Agric., Univ. S. Pacific, Apia, Samoa, October 18-22, 1999
- 00-165-A Examples of Successful FSD Approaches in the Improvement of Farming Systems  
D.W. Norman  
Proc. Reg. Workshop on Improv. Trad. Farming Syst. for S. Pacific Countries. Inst. for Res., Ext., and Training in Agric., Univ. S. Pacific, Apia, Samoa, October 18-22, 1999  
Also to be published in J. Rural Health
- 00-257-J Dakota Growers Pasta  
M. Boland, C. Freberg, D. Barton, J. Katz  
Case Res. J. 21(2):35-56, 2001
- 00-266-A Sorghum-Based Farming Systems in Botswana: The Challenges of Improving Rural Livelihood in a Drought-Prone Environment  
C.E. Bussing, D. Norman  
Proc. Intl. Geog. Union Symp. on Dynamics of Marginal and Critical Regions, Albuquerque, New Mexico, June 1999
- 00-270-J Beyond Profitability: Using Financial Indicators to Measure Sustainability  
S. Freyenberger, R. Levins, D. Norman, D. Rumsey  
Am. J. Alt. Agric. 16:31-34, 2001
- 00-345-A Exporting U.S. and Uruguayan Beef to the European Union  
M.E. Marshall, M. Boland, D. Conforte  
Proc. Intl. Agric. Trade Res. Consortium and NE-165 Global Food Trade and Cons. Demand for Quality Conf., Montreal, Canada, April 2000
- 00-494-J Midwest Grain Products: A Case Study  
M. Boland, N. Mitchell, K. Stiegert  
Intl. Food and Agribus. Manag. Rev. 3:457-472, 2000
- 00-505-J Midwest Grain Products: Teaching Note  
M. Boland  
Intl. Food and Agribus. Manag. Rev. 3:457-472, 2000
- 01-131-J Determining Socially Optimal Nitrogen Application Rates Using a Delayed Response Model: The Case of Irrigated Corn in Western Kansas  
E.M. Nkonya, A.M. Featherstone  
J. Agric. and Res. Econ. 25:453-467, 2000
- 01-200-B Tobin's q and the Value of Agriceutical Firms  
M. Boland  
In: *Market Development for Agriculture Biotechnology Product.* D. Zilberman and V. Santaniello (eds.). Commonwealth Bureau International Press, 2002
- 01-253-J Consumer Perceptions of Three Food-Safety Interventions Related to Meat Processing  
C. Schroeter, K.P. Penner, S.A. Fox  
Dairy, Food and Envir. Sanit. 21:570-581, 2001
- 01-324-A Institutionalization of Technology Development  
D.W. Norman  
Proc. of the Japanese International Center for Agric. Sci. Symposium (JIRCAS), Epochal, Tsukuba, Japan, November 1-2, 2000

## Publications of Station Scientists

- 01-360-A American Crystal Sugar Company  
M. Boland, D. Barton  
Proc. of the 4<sup>th</sup> Annual International Agribusiness Case Study Conference, Wageningen University and Research Center, Amsterdam, Netherlands, June 6-8, 2002
- 01-391-J Consumer Preferences for Pathogen-Reducing Technologies in Beef  
K. Fingerhut, P. Zhang, J. Fox, M. Boland  
J. Food Safety 21:97-110, 2001
- 01-403-D Recent Research in the Economics of Food Safety  
J.A. Fox, M.A. Boland, P. Zhang  
Agric. Econ Dept. Rep., April 2001, 2 pp.  
(Available from department only)
- 01-408-J A Review of Baccalaureate Degree Programs in Agribusiness Management  
M. Boland, E. Lehman, J. Stroade  
Intl. Food and Agribusiness Mngt. Rev. 10:1-11, 2002
- 01-422-A What Can a Kansas Farmer Afford to Pay to Rent Cropland?  
J.B. Mills, R.O. Burton Jr., K.C. Dhuyvetter, T.L. Kastens  
Presented at Amer. Ag. Econ. Assn. Annual Meetings, Chicago, Illinois, August 5-8, 2001
- 01-454-D Costs Related to HACCP Implementation for Small Meat and Poultry Businesses in the Great Plains  
D. Peterson, M. Boland, J. Fox, E. Boyle  
Agric. Econ. Dept. Research Report No. 34, June 2001, 15 pp.  
(Available from department only)
- 01-464-A Integrating Computer Applications throughout the Agribusiness Curriculum: A "Module" Approach  
B. Schurle, J. Stroade  
Proc. WAEA, Also published as  
Agric. Econ. Staff Paper 01-12, July 2001, 17 pp.  
(Available from department only)
- 01-471-J The Effects of a Federal Flat Tax on Agriculture  
C.A. Wilson, A.M. Featherstone, D.D. Elfner  
Rev Ag Econ. 24:160-180, 2002
- 01-472-J Assessing Agricultural Risk among States  
M.S. Daniel, A.M. Featherstone  
J. American Society of Farm Managers and Rural Appraisers, 107-114, 2001
- 01-473-J Productivity Growth in the Western Hemisphere (1978-94): The Caribbean Perspective  
P. Lall, A.M. Featherstone, D.W. Norman  
J. Production Analysis 17:213-231, 2002
- 01-474-J Interactivity and Soft Computing in Portfolio Management: Should Farmers Own Food and Agribusiness Stocks?  
Y. Duval, A.M. Featherstone  
Amer J Ag Econ. 84:120-133, 2002
- 01-479-J Post Implementation Costs of HACCP and SSOPs in Great Plains Meat Plants  
M. Boland, D. Peterson Hoffman, J.A. Fox  
J. Food Safety 21:195-204, 2001
- 02-28-A An Economic Analysis of Carbon Sequestration for Wheat and Grain Sorghum Production in Kansas  
T.D. Allen, J.R. Williams, R.G. Nelson, M.M. Claassen, C.W. Rice  
Proc. Soil and Water Conservation Society  
Agric. Econ. Department Staff Paper 02-01, July 2001, 30 pp.  
(Available from department only)
- 02-41-D Markets for Trait Specific Grains Produced in Kansas  
M. Domine, M.A. Boland, T. Herrman  
Agric. Econ. Department Report, October 2001, 2 pp.  
(Available from department only)
- 02-143-J Dynamics of Irrigation Water Use in Sudan Gezira Scheme  
C.A. Guvele, A.M. Featherstone  
Water Policy 3:363-386, 2001
- 02-145-J Empirical Properties of Duality Theory  
J.L. Lusk, A.M. Featherstone, T.L. Marsh, A.O. Abdulkadri  
Australian Journal of Ag. and Res. Econ. 46:45-68, 2002
- 02-247-D The Japanese Beef Market  
H.H. Peterson  
Agric. Econ. Staff Paper 02-02, January 2002, 19 pp.  
(Available from department only)
- 02-271-A Alfalfa Quality and Alternative Pricing Systems  
J.A. Hopper, H.H. Peterson, R.O. Burton Jr.  
J. Ag. and Appl. Econ. 34:378(abstract), 2002
- 02-318-S 2002 Cattlemen's Day  
T.B. Farran, J.S. Drouillard, D.A. Blasi, H.J. LaBrune, S.P. Montgomery, J.J. Sindt, C.M. Coetzer, R.D. Hunter, J.J. Higgins, M.F. Spire, J.E. Minton, T.H. Elsasser, A.M. Trater, J.N. Pike, J.T. Fox, T.J. Kessen, M.J. Sulpizio, B.D. Lambert, E.C. Titgemeyer, C.A. Loest, R.T. Ethington, C.M. Gordon, J. Gosch, B.J. Johnson, V.S. Gill, H. Thippareddi, R.K. Phebus, J.L. Marsden, C.L. Kastner, R.J. Danler, E.A.E. Boyle, D.Y.C. Fung, J.R. Sabah, T. Harshavardhan, J.W. Wendelburg, E. Ceylan, M.C. Hunt, K. Kerr, N. Pike, T.L. Marsh, N.E. Piggott, R.A. Mancini, D.H. Kropf, K.A. Hachmeister, D.E. Johnson, S. Fox, M.E. Dikeman, A.L. Reicks, T.E. Lawrence, E. Obuz, D.A. King, T.L. Wheeler, M. Koohmaraie, R.R. Timm, J.A. Unruh, J.E. Boyer, Jr., A.T. Waylan, R.D. Jones, D.E. Schafer, A.M. Richardson, S.K. Johnson, B.A. Hensley, T.J. Marple, J.S. Stevenson,

## Publications of Station Scientists

- D.M. Grieger, C.D. Holladay, D.R. Eborn, K.R. Harmony, J.R. Davis, T.T. Marston, D.W. Moser, L.W. Wankel, J. Fanning, D.R. Mark, T.C. Schroeder, L. Stryker, M. Langemeier, J.C. Niefert, T. Yearly, M.E. Uriarte-Archundia, K.K. Bolsen, B.E. Brent, L.W. Lomas, J.L. Moyer, G.L. Kilgore, J.I. Arroquy, R.C. Cochran, T.A. Wickersham, D.A. Llewellyn, C.G. Farmer, F.K. Brazle, E. Vanzant, T. Jones, J. Wilson, D. Yauk, M. Ploger, G. McClure, M. Holder, B. Allen, W. Bell, H. Jansonius  
Kans. Agric. Exp. Stn. Report of Progress 890, February 2002, 174 pp.
- 02-350-D Irrigated Equipment Cost Survey in Kansas  
H.M. Bigge, L.J. Tsoodle, C.A. Wilson  
Ag. Econ. Departmental Staff Paper 02-03, March 2002, 9 pp.  
(Available from department only)
- 02-351-J American Crystal Sugar Company  
M. Boland, D. Barton  
J. Finance Case Research 4, 2002
- 02-373-D Irrigated Crop-Share Leasing Arrangements in Kansas  
H.M. Bigge, L.J. Tsoodle, C.A. Wilson  
Ag. Econ. Departmental Staff Paper 02-04,  
March 2002, 7 pp.  
(Available from department only)
- 02-380-S 2002 Agricultural Research Southeast Agricultural  
Research Center  
L.W. Lomas, J.L. Moyer, D.W. Sweeney, K.W. Kelley, J.H.  
Long, F.K. Brazle, G.L. Kilgore,  
R. Jones, C.W. Marr, S. Staggenborg, S. Duncan, M.  
Knapp, K. Janssen, C. Taliaferro  
Kans. Agric. Exp. Stn. Report of Progress 892,  
April 2002, 78 pp.
- 02-410-D Economic Issues with Marketing Hard White Wheat  
M. Boland, D. Barton  
Department Report, May 2002  
(Available from department only)
- 02-452-D Staff, Programs, and Publications in Agricultural Economics  
– Kansas State University-2001  
D.L. Foster  
Ag. Econ. Staff Paper 02-05, May 2002, 40 pp.  
(Available from department only)
- 02-456-D Custom Application Cost Survey in Kansas  
L.J. Tsoodle, H.M. Bigge  
Ag. Econ. Staff Paper 02-06, June 2002, 29 pp.  
(Available from department only)

## Agronomy

- 97-440-J Using GIS to Assess and Manage the Conservation  
Reserve Program in Finney County, Kansas  
J. Wu, M.D. Ransom, M.D. Nellis, G.J. Kluitenberg, H.L.  
Seyler, B.C. Rundquist  
Photogrammetric Engineering and Remote Sensing  
68:735-744, 2002
- 99-84-J Soil Nitrogen Dynamics in Mixtures of Eastern Gamagrass  
with Alfalfa and Red Clover  
J.L. Gil and W.H. Fick  
Agron. J. 93:902-910, 2001
- 99-178-J The Use of Winter Annual Cover Crops in a Wheat-Grain  
Sorghum Rotation in South Central Kansas  
R.R. Janke, M.M. Claassen, W.F. Heer, J. Jost, S.  
Freyenberger, D. Norman  
J. Sustainable Agric. 20(2):69-88, 2002
- 99-354-J Soil Loss Predictions with Three Erosion Simulation Models  
S. Bhuyan, P.K. Kalita, K.A. Janssen, P. Barnes  
J. Environmental Modeling Software 17(2):137-142, 2002
- 99-388-A Assessment of Wind Erosion Parameters using Wind Tunnels  
L.J. Hagen  
Proc. 10th Intl. Soil Cons. Org. Meeting, May 1999
- 99-389-A Assessment of Wind Erosion Parameters using Wind Tunnels  
L.J. Hagen  
In: *Sustaining the Global Farm. Proc. of 10<sup>th</sup> International  
Soil Conservation Conference*,  
D.E. Stott, R.H. Mohtar, G.C. Steinhart (eds.).  
Purdue Univ., West Lafayette, IN, 742-746, 2001
- 99-423-A Influence of Vegetation on Soil Loss by Wind Erosion  
D.V. Armbrust  
In: *Sustaining the Global Farm. Proc. Of 10<sup>th</sup> International  
Soil Conservation Conference*,  
D.E. Stott, R.H. Mohtar, G.C. Steinhart (eds.).  
Purdue University., West Lafayette, IN, 1999
- 99-497-B Contaminant Transport in the Root Zone  
I. Vogeler, S.R. Green, B.E. Clothier, M.B. Kirkham, B.H.  
Robinson  
In: *Trace Elements in Soils: Bioavailability, Fluxes and  
Transfer*. I.K. Iskandar and M.B Kirkham (eds.) Lewis  
Publishers, Boca Raton, Florida., 175-197, 2001
- 99-512-A Estimating Carbon Turnover in a Long-Term Study of  
Residue Management  
S.U. Bohm, C.W. Rice, A.J. Schlegel  
Proc. Intl. Symp. on Agricultural Practices and Policies for  
Carbon Sequestration in Soil, 255-263, 2002

## Publications of Station Scientists

- 00-18-J Genetic Analysis of Biotype I Greenbug Resistance in Sorghum  
M.R. Tuinstra, G.E. Wilde, T. Kriegshauser  
*Euphytica* 121:87-91, 2001
- 00-201-A Effects of Seeding Rate and Ridomil + Rival or Apronmass Seed Treatments on Stand and Yield of Soybeans  
D. Jardine, K. Janssen, J.H. Long, L. Maddux  
*Fungicide and Nematicide Tests* 55:461, 2000
- 00-232-J Genotype Interaction between Resistance Genes in Wheat and Virulence Genes in the Hessian Fly  
*Mayetiola Destructor* (Diptera: Cecidomyiidae)  
M. El Bouhssini, J.H. Hatchett, T.S. Cox, G.E. Wilde  
*Bull. Entom. Res.* 91:327-331, 2001
- 00-315-J Transgenic Sorghum Plants Constitutively Expressing a Rice Chitinase Gene Show Improved Resistance to Stalk Rot  
S. Krishnaveni, J.M. Jeoung, S. Muthukrishnan, G.H. Liang  
*J. Genet. Breeding* 55:151-158, 2001
- 00-324-J Nonrandom Hypervariability of Chloroplast DNA in *Medicago sativa*  
D.Z. Skinner  
*Theor. and Appl. Genet.* 101:1242-1249, 2000
- 00-338-J Relative Time of *Amaranthus retroflexus* Emergence Affects Dry Matter Partitioning  
S. Knezevic, R. Vanderlip, M. Horak  
*Weed Sci.* 49:617-621, 2001
- 00-358-J Effects of Tillage and Phosphorus Placement on Phosphorus Runoff Losses in a Grain Sorghum-Soybean Rotation  
R.J. Kimmell, G.M. Pierzynski, K.A. Janssen, P.L. Barnes  
*J. Environmental Quality* 30(4):1324-1330, 2001
- 00-365-J Canopy Structural Relationships in Field Crops  
D.V. Armbrust, A. Retta  
*Agricultural Systems*, August 2000
- 00-391-J *In Situ* Stabilization of Soil Lead, Cadmium, and Zinc Using Phosphorus and Manganese Oxide: Influence of Plant Growth  
G.M. Hettiarachi, G.M. Pierzynski  
*J. Environ. Qual.* 31:564-572, 2002
- 00-454-J Corn Yields and Profitability for Low Capacity Irrigation Systems  
D.M. O'Brien, F.R. Lamm, L.R. Stone, D.H. Rogers  
*Appl. Engin. in Agric.* 17(3):315-321, 2001
- 01-29-J Photosynthesis and Grain Growth of Wheat under Extreme Nitrogen Nutrition Regimes during Maturation  
P. Gynga, A.L. Demagante, G.M. Paulsen  
*J. Plant Nutr.* 25:1281-1290, 2002
- 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 Sci.* 42:1135-1138, 2002
- 01-125-B Wind and Sandblast Damage to Growing Vegetation  
D.V. Armbrust and A. Retta  
In: *Arid Zone Research: Perspectives and Challenges*, *Annals of Arid Zone* 39(3):273-273-284, 2000
- 01-126-J Glufosinate Efficacy on *Amaranthus* Species in Glufosinate-Resistant Soybeans  
E. Coetzer, K. Al-Khatib, D.E. Peterson  
*Weed Tech.* 16:326-331, 2002
- 01-136-J Development of an Expressed Sequence Tag (EST) Library for *Medicago sativa*  
D.B. Hays, D.Z. Skinner  
*Plant Science* 161:517-526, 2002
- 01-167-J Water Depletion Depth of Grain Sorghum and Sunflower in the Central High Plains  
L.R. Stone, D.E. Goodrum, A.J. Schlegel, M.N. Jaafar, A.H. Khan  
*Agron. J.* 94:936-943, 2002
- 01-182-J Isolation for Alfalfa of Resistance Gene Analogs Containing Nucleotide Binding Sites  
J.C. Cordero, D.Z. Skinner  
*Theor. and Appl. Genet.* 104:1203-1209, 2002
- 01-199-J Pollen Morphological Differences in *Amaranthus* Species and Interspecific Hybrids  
A.S. Franssen, D.Z. Skinner, K. Al-Khatib, M.J. Horak  
*Weed Sci.* 49:732-737, 2002
- 01-212-J Impact of Palmer Amaranth (*Amaranthus palmeri*) on Yield and Quality of Corn (*Zea mays*) Forage  
R.A. Massinga, R.S. Currie  
*Weed Tech.* 16(3):532-536, 2002
- 01-217-J Using Yield-Monitor Data to Determine Spatial Crop-Production Potential  
R.K. Taylor, G.J. Kluitenberg, M.D. Schrock, N. Zhang, J.P. Schmidt, J.L. Havlin  
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- 99-153-J A Collaborative Study Evaluating in Situ and in Vitro Techniques for Estimating Effective Degradability of Different Forages  
C.P. Mathis, R.C. Cochran, E.S. Vanzant, I.E.O. Abdelgadir, J.S. Heldt, K.C. Olson, D.E. Johnson, J. Caton, D. Faulkner, G. Horn, S. Paisley, R. Mass, K. Moore, J. Halgerson  
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- 00-367-J Dose-Responses of Weeds and Winter Wheat to MKH 6561  
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- 01-413-J Relationship Between Chlorophyll Loss and Photosynthetic Rate in Greenbug (Homoptera: Aphididae) Damaged Sorghum  
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- 02-137-A The Effect of Propoxycarbazone-Sodium on Jointed Goatgrass (*Aegilops cylindrica* Host)  
H.J. Santel, J.E. Anderson, R.G. Brenchley, J.E. Cagle, A.C. Scoggan, A. Wellmann, P. Stahlman, P. Geier  
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- 02-138-J Wheat Plant Density Influences Jointed Goatgrass (*Aegilops cylindrica*) Competitiveness  
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- 02-169-J Effects of Greenbug, *Schizaphis graminum* (Rondani) (Homoptera: Aphididae), Biotype K on Chlorophyll Content and Photosynthetic Rate of Tolerant and Susceptible Sorghum Hybrids  
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- 02-222-S Kansas Fertilizer Research  
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K.W. Kelley, G.L. Kilgore, L.D. Maddux, C.W. Marr, V.L. Martin, M. Mikha, J.L. Moyer, B.J.  
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- 02-223-J Analysis of Combining Ability for Ergot Resistance in Grain Sorghum  
J.D. Reed, M.R. Tuinstra, N.W. McLaren, K.D. Kofoid, N.W. Ochanda, L.E. Claflin  
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- 02-236-J Phylogenetic Relationships, Strain Diversity, and Biogeography of Tritimoviruses  
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R. French, D. Stenger  
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- 02-237-J Patterns of Polymorphism in Wheat Streak Mosaic Virus: Sequence Space Explored by a Clade of Closely Related Viral Genotypes Rivals That between the Most Divergent Strains  
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- 00-372-J Nitrogen Fertilization for Subsurface Drip-Irrigated Corn  
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- 02-31-S 2001 Kansas Performance Tests with Winter Wheat Varieties  
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- 02-287-D 2001 National Winter Canola Variety Trial  
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- 02-302-S 2001 Kansas Performance Tests with Summer Annual Forages  
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- 02-415-S Field Day 2002 Southwest Research-Extension Center  
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- 00-201-A Effects of Seeding Rate and Ridomil + Rival or Apronmass Seed Treatments on Stand and Yield of Soybeans  
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- 00-392-J Effects of Maturity and Determinacy in Soybean on Host-Parasite Relationships of *Heterodera glycines*  
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- 01-470-J Effect of a Single Irrigation at Different Reproductive Growth Stages on Soybean Planted in Early and Late June  
D.W. Sweeney, G.V. Granade  
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- 02-27-J Phytostabilization of Metal Mine Tailings Using Tall Fescue  
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- 02-222-S Kansas Fertilizer Research  
R.E. Lamond, M.M. Claassen, D.L. Fjell, H.C. George, C.B. Godsey, W.B. Gordon, K.A. Janssen, K.W. Kelley, G.L. Kilgore, L.D. Maddu, C.W. Marr, V.L. Martin, M. Mikha, J.L. Moyer, B.J. Niehues, C.J. Olsen, G.M. Pierzynski, K. Rector, C.W. Rice, A.J. Schlegel, D.W. Sweeney, C.A. Thompson, D.A. Whitney, B.D. Wood  
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- 02-239-S 2001 Kansas Performance Tests with Alfalfa Varieties  
K. Roozeboom, P. St. Amand, J. Moyer, M. Witt, W. Heer, L. Maddux  
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- 02-299-A Evaluation of Starter and Pop-up Fertilizers on Grain Sorghum Planted No-Till in Southeastern Kansas  
D.W. Sweeney  
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- 02-318-S 2002 Cattlemen's Day  
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- 02-346-A Nitrogen Rate, Placement, and Harvest System Effects on Eastern Gamagrass Hay Production  
J.L. Moyer, D.W. Sweeney  
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- 02-413-S Field Research Agronomy Experiment Fields  
L. Maddux, K. Janssen, W. Gordon, M. Claassen, V. Martin, W. Heer, S. Duncan, D. Fjell, R. Janke, K. McVay, J. Moyer, D. Peterson, G. Pierzynski, D. Regehr, C. Rice, K. Roozeboom, S. Staggenborg, R. Taylor, D. Taliaferro, D. Whitney, G. Wilde  
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- 00-372-J Nitrogen Fertilization for Subsurface Drip-Irrigated Corn  
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Trans. Am. Soc. Agric. Engin. 44(3):533-542, 2001
- 01-167-J Water Depletion Depth of Grain Sorghum and Sunflower in the Central High Plains  
L.R. Stone, D.E. Goodrum, A.J. Schlegel, M.N. Jaafar, A.H. Khan  
Agron. J. 94:936-943, 2002
- 01-212-J Impact of Palmer Amaranth (*Amaranthus palmeri*) on Corn (*Zea mays*) Grain Yield and Yield and Quality of Forage  
R.A. Massinga, R.S. Currie  
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- 01-287-J Survival of Kansas Dipel-Resistant European Corn Borers (Lepidoptera: Crambidae) on Bt and Non-Bt Corn Hybrids  
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- 01-301-J Planting Date, Hybrid Maturity and Plant Population Effects on Soil Water Depletion, Water Use and Yield of Dryland Corn.  
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- 01-353-J Transition to Dryland Agriculture: Limited Irrigated vs. Dryland Corn  
C.A. Norwood, T.J. Dumler  
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- 01-393-J Susceptibility and Detoxifying Enzyme Activity in Two Spider Mite Species (Acari: Tetranychidae) after Selection with Three Insecticides  
X. Yang, L.L. Buschman, K.Y. Zhu, D.C. Margolies  
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- 01-414-J Feasibility of Four-Year Crop Rotations in the Central High Plains  
A.J. Schlegel, T.J. Dumler, C.R. Thompson  
Agron. J. 94:509-517, 2002
- 01-420-S Southwest Research and Extension Center Field Day 2001  
J. Elliott, D. Bond, D. Nolan, C. Norwood, A. Schlegel, L. Stone, T. Dumler, M. Alam, T. Trooien, D. Rogers, R. Currie, C. Thompson, L. Buschman, P. Sloderbeck, M. Witt  
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- 02-224-S 2001 Kansas Performance Tests with Soybean Varieties  
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- 02-239-S 2001 Kansas Performance Tests with Alfalfa Varieties  
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- 02-243-S 2001 Kansas Performance Tests with Sunflower Hybrids  
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- 02-287-D 2001 National Winter Canola Variety Trial  
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- 02-415-S Field Day 2002 Southwest Research–Extension Center  
J. Elliott, D. Bond, D. Nolan, A. Schlegel, L. Stone, T.  
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# Active Projects — FY 2002

## Agricultural Economics

- 536865 Intensive Farm Management Education for Kansas Crop Producers
- 520542 Experimental Auctions and External Validity: Consumer Demand for Quality Differentiated Beef
- 520543 USDA Agricultural Marketing Resource Center
- 520545 Risk Information and Education for Producers Investing in Value Added Businesses
- 536898 KS Cooperative Development Center Education and Assistance Program
- 536894 Risk Management Education Proposal for Kansas
- 520547 Are Equivalent Advertising Assessments Optimal in the Face of Product Differentiation?
- 535133 USDA Food and Agricultural Sciences National Needs Graduate Program - Marketing and Management
- 520549 Determinants of Fast Food Consumption
- 520548 Capacity Building for Farming Systems Development in Support of the Special Program for Food Security and Increased Food
- 520551 Agricultural Resource Husbandry in Sub-Saharan Africa

## Agronomy

- 536909 Grain Sorghum Production in Kansas: Extension and Applied Research
- 536910 Revising KSU Sorghum Phosphorus and Potassium Nutrient Recommendations
- 520986 Transformation of Sorghum for Enhanced Stalk Rot Resistance and Drought Tolerance
- 520005 Use of Strip-Tillage for Corn Production in Kansas
- 536916 Revising KSU Corn Phosphorus and Potassium Nutrient Recommendation
- 520987 Breeding Grain Sorghum for Improved Dryland Production
- 536920 Soybean Production in Kansas: Extension and Applied Research
- 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
- 536830 Grazing Land Water Quality - Part 5
- 536856 Soybean Production in Kansas Extension and Applied Research
- 520965 Enhancing Soybean Germplasm Development
- 520967 Variety Testing, Farmer Education and Management of Identity Preserved Farming Systems
- 536873 Nature Conservancy Soil Testing
- 520969 Greenhouse Studies to Demonstrate Zinc Phytotoxicity of Native Plant Species
- 536883 Society for Range Management 2002 Web Site Maintenance and Development of CD Abstracts
- 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 MATCHING for Enhancement of Research on Fate and Impact of Environmental Pollutants
- 520978 Bringing Genomics to the Wheat Fields
- 536902 Research/Demonstration/Education Compost Facility and Compost Operator and Technical Assistance

- 520981 Small Plot Combine for the Manhattan Wheat Breeding Program
- 520990 IWM Implementation: A Regional Approach
- 520982 Developing Multiple Pest Resistant Wheat Germplasm
- 520984 Development of Hard White Winter Wheat for Kansas
- 520985 Improvement of Hard Red Winter Wheat for Kansas
- 520996 Facilitate Development of Abiotic Stress Resistant Wheat

## Anatomy and Physiology

- 528619 Porcine Antimicrobial Peptide
- 528426 Virological, Immunological, and Molecular Components of Reproductive PRRS
- 528620 Short-Term Training Students in Health Professionals Schools

## Animal Science & Industry

- 521884 Evaluation of Nutridense Corn Hybrids for Nursery Pig Diets
- 521885 Determination of Factors that Cause Livery Flavor Development in Various Beef Muscles from the Chuck and Loin
- 521886 Validation of Sow Weight Gain Models using Data from the NPC Maternal Line Genetic Evaluation Project
- 521887 Molecular Characterization of Escherichia coli 0157:H7 from Beef animals, Environment and Foodborne Disease Outbreaks
- 521888 Development of an Integrated HACCP Plan and Microbiological Risk Assessment of Beef Trim and Intervention Treatments for Use as Raw Material for Ground Beef
- 521890 Control of Listeria monocytogenes in Ready-to-Eat Meat Products Using a Combination of Saturated Steam-Based Post-Process Pasteurization and Chemical Antimicrobials
- 521889 Effect of Soybean Meal Quality on Protein Utilization
- 536891 North Central Regional Aquaculture Center Extension Project
- 521892 Microbial Evaluation of Hill's Pet Food Products
- 521893 Effect of Protein Quality on Growth Performance in 11-27 kg Pigs - Phase 3
- 521891 Flaxseed as Component of Finishing Cattle Diets
- 521882 Validating E. coli 0157:H7 in Direct Acidified Beef and Venison Semi-Dry Sausages
- 521895 Infrared Thermography of Market Hogs as a Predictor of Pork Quality
- 521894 Recovery and Identification of Airborne Microorganisms in Swine Facilities Using Selective Agar and Thin Agar Layer(TAL) Resuscitation Media
- 521899 Effects of Vegetable and Animal Fat Sources on Finishing Cattle Performance, Carcass Characteristics, and Meat Sensory Characteristics
- 521897 Optimize the Quality, Consistency and Shelf-life of Marinated Fresh Beef Products

## Biochemistry

- 527298 Material Transfer Agreement
- 527299 Metabolic Profiling of Membrane Lipids and their Compositional Dynamics in Plant Stress Responses

- 527301 Cancer Protective Effects of Wheats with Different Antioxidant Potentials
- 527302 Adhesion Receptors of the Insect Immune System
- 527303 Molecular Analysis of Metalloprotease Disintegrin ADAM 12

## Biological and Agricultural Engineering

- 536914 Mobile Irrigation Lab - Improved Irrigation Efficiency
- 536918 Kansas AgriAbility Project
- 536867 Irrigation Scheduling Demonstration of Efficient Water Use by Corn in Western KS
- 527775 Performance Evaluation of Wetlands in NE KS
- 527779 Part 2 of Performance Evaluation of Wetlands in NE KS
- 536895 KS Environmental Leadership Program (KELP) - Class 3
- 527782 Development of Calibrations and Procedures for a High Speed Machine Vision Grain Inspection System

## Biology

- 526803 Cross-Kingdom Comparison of Host Defense Genes
- 526783 Lipid Signaling and NPR1-Independent Pathway in Plant Defense
- 529471 Characterization of Insect Rpr, Hid, and Grim Homologs
- 526784 Detection of Genes Encoding UV Repair Enzymes
- 526785 Develop an On-Line Mammal Atlas for Kansas - First Phase
- 526786 Scaling Up the Ecosystem Consequences of Forest Expansion in the Great Plains Region
- 526787 KS NIH COBRE Center for Cancer Experimental Therapeutics
- 526790 Development of Aquatic GAP Analysis for Kansas
- 770452 FSML: Construction of Duplex-Unit Housing for Visiting Researchers at the Konza Prairie Biological Station
- 526792 Nitrate Uptake and Retention in Streams: Mechanisms and Effects of Human Disturbances from Stream Reaches
- 526793 Intergovernmental Personnel Act (IPA) Mobility Assignment
- 526795 Kansas Biomedical Research Infrastructure Network (K-BRIN)

## Communications

- 536863 FY02 Kansas Public Broadcasting Council Service and Incentive Program Grant - FY 03 Kansas Public Broadcasting Council Service and Incentive Program
- 536900 Technical Assistance to Water Users: ET/Weather Station Operation and Maintenance

# Active Projects

## Diagnostic Medicine/ Pathobiology

- 528432 Correlation of CD151 Levels in Peripheral Blood Monocyte Cells with Porcine Reproductive and Respiratory Syndrome: The Role of MHC Genes and Inbreeding on Reproduction and Racing Performance in Greyhounds
- 528434 Preventing Malignant Hyperthermia in Racing Greyhounds: Genetic Screening for Calcium Release Channel Mutations
- 528424 Effect of Lasalocid on Experimentally Induced Abomasal Bloat and Abomasitis in Neonatal Calves
- 528425 Development of a Canine Model of E coli Induced Hemorrhagic Colitis and Hemolytic Uremic Syndrome: Phase II
- 528428 An Improved Multiplex Molecular Test for Sensitive Detection of Canine Ehrlichiosis Agents
- 528427 Role of Fusobacterium Necrophorum Leukotoxin in Virulence
- 528429 West Nile Virus Surveillance: Lab Analysis
- 528431 Thrombin and vWF in shiga-toxin associated HUS
- 529484 Control of Enterotoxin Gene Expression in S. aureus

## Director's Office

- 525085 Consortium for Agricultural Soils Mitigation of Greenhouse Gases (CASMGs)
- 536906 Water Quality Protection from Nitrogen Using Subsurface Drip Irrigation (KDHE title: Subsurface Drip Irrigation to Protect Groundwater Quality)
- 536911 Earth Awareness Researchers for Tomorrow's Habitat
- 527784 Air Quality: Odor, Dust, and Gaseous Emissions from Concentrated Animal Feeding Operations in the Southern Great Plains
- 536904 Nutrient Placement and Movement in No-Till cropping Systems for Protecting Groundwater Water Quality
- 536875 Nemaha County Composting Demonstration
- 536885 KS Water Resources Adult Education
- 525449 FY2002 KWRRI Program Admin. Project (525449); Water and Future of Kansas Conference (525453); High Plains Aquifer (525454); Subaward for High Plains Aquifer (525455); Groundwater Recharge in High Plains (525456); Development of a Framework for Coupled Hydrologic-Economic (525457)

## Entomology

- 522477 Effect of Timing and Number of Insecticide Applications on Sunflower Headmoth Control in Kansas
- 536901 Enhancing Information Exchange Through a User-Friendly Diagnostic Image Library
- 522457 A Plant Genomics Research and Training Career Advancement Program
- 522463 Investigations on the Soybean Stem Borer in Kansas
- 522464 Heliiothis Virescens: Model for Signal Transduction of Allatropism in Moths

- 522465 Evaluation of Transgenic Corn for Corn Rootworm Pest
- 522466 Development of a Corn Rootworm Area Wide Management Program in Kansas #2
- 522467 West Nile Virus Surveillance
- 522469 Insecticide Efficacy and Pest Population Monitoring/Damage-loss Assessments
- 522470 Minimize Insect Caused Losses to Alfalfa, Soybeans and Other Crops
- 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
- 522481 Biology and Management of the Soybean Stem Borer in Kansas
- 522474 Molecular Diagnosis of Wheat Aphid Resistance
- 522473 Product Transfer and Evaluation Agreement/Field Trials
- 522478 Dow Field Trials Project

## Food Animal Health & Management Center

- 528798 Corn Particle Size and Pelleting Influence on Fecal Shedding and Enteric Colonization of Salmonella Typhimurium
- 528795 Ecology of E-coli O157:H7 in Beef Cow-Calf Operations from Ranch through Feedlot

## Grain Sciences & Industry

- 523128 Market Development Grant - International Grains Program
- 523093 Market Scale Evaluation of White Winter Wheat in Flour Tortilla Manufacturing
- 535088 Market Development Grant - International Grains Program Grain Storage, Handling, and Sanitation Specialist
- 523105 Corn Dry Milling Quality Assessment for Value-Enhanced
- 523104 Characterization of the Wheat Polyphenol Oxidase (PPO)
- 523106 Environmentally Favorable Adhesives
- 523109 Pesticide Alternatives and Pollution Prevention Techniques
- 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
- 523114 Effects of a Novel Ultrasonic Emitter on the Mating Behavior and Behavior Performance of the Indianmeal Moth
- 523115 Identification of Factors Affecting Petfood Durability
- 523123 International Grains Program Support Project
- 523118 Use of Low-Protein Hard White Winter Wheats for Asian Noodles
- 523121 Stored Wheat Insect Management with Spinosad and Aeration
- 523122 Biodegradable Plastics from Wheat Starch and Poly(lactic acid)
- 523119 Molecular Factors Involved in Determining Wheat Flour and Dough Quality
- 523116 Wheat Quality for Chinese Northern-Style Steamed Bread

- 523120 Protein/Hardness Screening of Early Progeny Wheats
- 523117 Quality Evaluation from KAES Wheat Breeding Programs
- 523127 Corn Dry Milling Performance

## Horticulture, Forestry and Recreation Resources

- 524095 Evaluation of Texas Bluegrass for Use in Golf Course Fairways and Roughs
- 524089 High Tunnels for the Central Great Plains: Profitable, Season-Extending, Horticultural Production Systems
- 524091 Development of Fruitless or Embryo-Lethal Woody Ornamental
- 524092 Chemical Indicators of Pecan Germplasm Yield Potential and Alternate Bearing
- 524093 Evaluation Component of Stardusters Topeka Urban Farm – Youth Job Training and Community Revitalization
- 524094 Monitoring of Hummingbirds in the Loma Alta Ecological Reserve (Ecuador)
- 536931 Postharvest Handling and Production Facilities for Horticulture Crop Research and Extension
- 524097 Ecuador Cloud Forest Research

## Human Nutrition

- 528177 Refrigeration Knowledge and Practices of Consumers
- 528178 Consumer Testing Assistance
- 536876 Improving Nutritional Outcomes in Rural Homebound Older Adults who Receive Home-Delivered Meals
- 536886 Stage-Based Intervention to Increase Fruit and Vegetable Intakes of Young Adults
- 528179 Quality of Cut Fresh Fruit

## Plant Pathology

- 524726 Enhancement of Soybean Through Genetic Engineering
- 524704 Workshop on Genomic Analysis of Plant-Associated Microorganisms
- 524703 Collaborative Research: Effects of Environmental Variation on Plant Disease in the Tallgrass Prairie and REU Supplement
- 524687 Over-expression of Antifungal Proteins in Transgenic Soybean
- 524690 Major Expansion of Qgene, a Popular Genomic Software Package
- 524689 General Resistance Mediated by Aradopsis NHO Genes and Pseudomonas Virulence
- 524692 Agroecology and Biotechnology of Fungal Pathogens of Sorghum and Millet
- 524693 UNESCO - AMS Travel Award
- 524699 Managing Lands for Both Reduced Wheat Streak Mosaic Virus and Benefits to Wildlife and the Environment
- 524698 Wheat Genetics Resource Center at Kansas State University
- 524702 Better Understanding and Further Utilization of Genes for Wheat Scab Resistance
- 524707 Development of Barley Yellow Dwarf-Resistant Wheat Cultivars for Kansas

## Active Projects

- 524708 Wheat Genetics Resource Center and Its Contributions to the Kansas Wheat Industry  
524706 Wheat Improvement through Genetic Engineering  
524705 Cooperative Breeding Program for Wheat Karnal Bunt Collaborative Research: Effects of Environmental Variation on Plant Disease in the Tallgrass Prairie (REU)  
524713 Plant Diagnostic Center Laboratories for Plant Disease and Pest Diagnosis and Surveillance  
524691 Agroecology and Biotechnology of Fungal Pathogens of Sorghum and Millet

## Sociology, Anthropology and Social Work

- 527631 Plastics Recycling: Using Agricultural Materials to Enhance Performance

## Statistics

- 527615 Assessment: General Statistical Assistance

## Agricultural Research Center—Hays

- 526028 Risks of Weed Spectrum Shifts in Glyphosate-Resistant Cropping Systems  
526030 Breeding Sorghum with Improved Grain Yield, Greenbug and Virus Resistance, and Pre-Flowering Drought Tolerance  
526024 Integrated Management Systems for Jointed Goatgrass in the Central Great Plains  
526025 Clearfield Winter Wheat Risk Assessment  
526026 FMC Corporation Fellowship  
526027 Weed Control in Sunflower Production  
526031 Kansas Dual Purpose Pest Resistant White Wheats  
526029 Risk and Management of Clearfield Winter Wheat  
526032 National Jointed Goatgrass Extension Coordinator

## Northwest Research and Extension Center

- 525781 Economically Optimal Corn Plant Population at Various Irrigation Capacities Using SDI  
525782 Reducing Irrigation Water Needs with High Frequency Limited Subsurface Drip Irrigation

## Southeast Agricultural Research Center

- 526424 Effects of Crop Rotation and Tillage Systems on Soybean Yield in SE Kansas  
526422 Effects of Crop Rotation and Tillage Systems on Soybean Yield in SE Kansas

## Southwest Research and Extension Center

- 526208 Irrigated Cropping Systems to Reduce Groundwater Depletion while Sustaining Profitability  
526209 Irrigated Cropping Systems to Reduce Groundwater Depletion while Sustaining Profitability  
526206 Manure and Water Management for Environmental Protection and Corn Production  
526204 Alleviation of Soil Compaction in Dryland Cropping Systems  
526205 Irrigated Cropping Systems to Reduce Irrigation Water Use and Groundwater Depletion while Sustaining Profitability  
526211 Irrigated Cropping Systems to Reduce Groundwater Depletion while Sustaining Profitability

## Veterinary Medicine, Dean

- 528950 Identification of Infectious Disease Syndromes in Agricultural (Food) Animals

## Extension Communications

- 536887 Rural Stroke Prevention Agreement between KDHE and CES, KSU  
536896 Cooperative Agreement between CES and Atchison and Leavenworth Counties to Evaluate the Out of School 4-H Youth Youth Mentoring for Weight Management  
536903 Arthritis Foundation, Kansas Chapter (AFK) program Efficacy Evaluation Project

## Agriculture and Natural Resources

- 536881 KS Agricultural Mediation Service  
536890 Sustainable Agriculture Research and Education Program (NCR Sustainable Agriculture Research and Education Professional Development Program (Kansas PDP))

## Extension Energy Service

- 536880 Water Quality Workshops: Preparing Citizens to Meet TMDL's  
536899 Waste Management Water Quality Projection Learning Center

## Northwest Area Office

- 536908 No-Till Wheat Production in Country Variety Trials

## Southeast Area Office

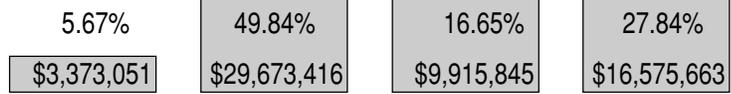
- 536913 Agricultural Risk Management for Women Managers

## Kansas Forest Service

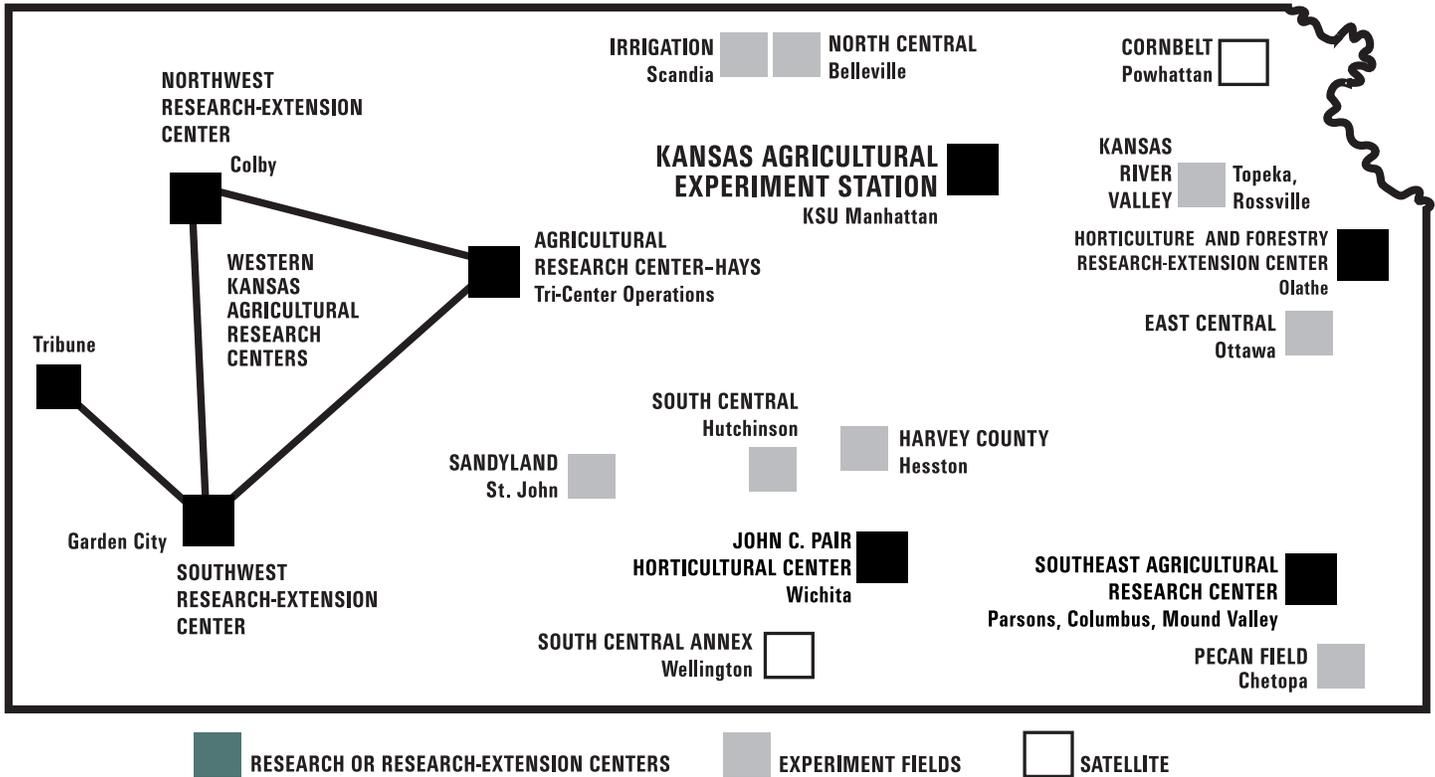
- 536849 KS Forest Inventory, Forestry Research, Forest Health Monitoring Program  
536872 Forestry Incentives Program FY2001  
536870 Assistance to Rural Firefighters  
536877 Forest Health Management/Forest Health Monitoring  
536884 Consolidated Payment Grant 2002  
536921 Resource Conservation and Development 2002

***FY2002 Kansas Agricultural Experiment Station Income and Disbursement Statement***

<b>FY2002 Expenditures</b>	<b>Federal</b>	<b>State</b>	<b>Fees</b>	<b>Sponsors</b>	<b>Total</b>	<b>Percent</b>
Faculty and Administrative Salary	\$2,340,614	\$19,351,026	\$882,616	\$8,739,572	<b>\$31,313,828</b>	<b>52.59%</b>
Classified and Student Salary	\$219,313	\$5,825,184	\$1,066,484	\$1,147,091	<b>\$8,258,072</b>	<b>13.87%</b>
Services, Material and Equipment	\$813,124	\$4,497,206	\$7,966,745	\$6,689,000	<b>\$19,966,075</b>	<b>33.54%</b>
<b>Totals</b>	\$3,373,051	\$29,673,416	\$9,915,845	\$16,575,663	<b>\$59,537,975</b>	<b>100%</b>



# Kansas State University Statewide Agricultural Research Services



## Kansas State University Agricultural Experiment Station and Cooperative Extension Service

DRR02

JUNE 2003

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age or disability. Kansas State University is an equal opportunity organization. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Marc A. Johnson, Director.