Kansas

FY 2005—FY 2006

Plan of Work Update

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Planning Process Activities at Kansas State University Research and Extension. For just over a year, KSRE has been engaged in a process to develop a new Five Year Plan. A steering committee reviewed our mission statement, core mission themes, and long-term intended outcomes in the context of our nearly adopted Core Values, the College of Agriculture Review, and the Image Report. The intent of the steering committee was to develop drafts of mission statements, core mission themes, and intended outcomes and to help stakeholders (internal and external) understand how they could provide input useful in shaping the final product. This planning process permitted us to build on and benefit from our past efforts and experiences.

Input from internal and external stakeholders has been used to guide our selection of core mission themes (CMTs) and long term intended outcomes (LTIOs). Faculty groups have interacted with external groups of agencies, organizations, and citizens to gain stakeholder feedback that has helped these efforts in terms of relevance, support, and understanding. Throughout this process, we have been trying to build on the results of surveys that provided feedback about how KSRE was perceived by taxpayers. Input is being received from direct contacts, meetings, a variety of discussions, and is supplemented by a web site designed to share information broadly and to provide another means for gathering feedback.

Each of our twelve long-term intended outcomes identifies a broad issue that is being addressed, the research foundation associated with it, and changes that will be measured over time. Note that the steering committee was not charged with completing the in-depth planning that drives our day-to-day work. That effort involves a larger number of participants (e.g., agents, specialists, researchers, partners) within each of the intended outcomes. Specialists and agents are currently developing team and individual action plans, hence the distribution of FTEs within each area is subject to change.

Core Mission Themes. The core mission themes listed below have been proposed for our next five-year plan and define areas of emphasis that agents, specialists, and researchers are devoting special emphasis on during the plan extension period. The most visible modification is an increased emphasis on adding value to agricultural products. KSU has been engaged in value-added work for some time. We expect that economic growth will expand if new markets create greater demand for raw commodities.

Healthy Communities: Youth, Adults, and Families
Safe Food and Human Nutrition
Adding Value to Agricultural Products
Natural Resources and Environmental Management
Competitive Agricultural Systems

Long Term Intended Outcomes. A few statements designed to provide insight into each of our twelve long-term intended outcomes follow. Note that these long-term intended outcomes form a web of interrelationships that link to more than one core mission theme. More detail (including strategies and tactics, plus desired outcomes) can be found at our Web site (http://www.oznet.ksu.edu/prev/)

Healthy Eating and Physical Activity. Individuals and families living in Kansas have high rates of risk factors for and/or incidence of food-, nutrition-, and sedentary living-related health problems, such as food-borne illness, obesity, heart disease, cancer, and diabetes. Kansas ranks 18th in percent low birthweight babies. Among adults in Kansas, 57% are overweight or obese and only 22% report achieving recommended physical activity levels. Regarding healthy eating patterns among Kansans ages 2 years and older, recommendations for meat were met by 26%; for fruit by 28%; for grain by 51%; for dairy by 52%; and for vegetables by 59%. Approximately 10% of the households in Kansas, including 35,000 children, experience hunger and/or food insecurity, and need help to maximize their family food resources in order to buy nutritious foods. In 2003, about 166,000 people, or 5% of Kansas households, received food stamps. Among a statewide sample of convenience of low income (up to $19,999/year) households, 50% or more considered as important the food and nutrition needs of seniors, adults, children, infants and teens, along with preparing easy and nutritious meals. Through multiple approaches – including basic and applied research and research-informed strategies – to promote healthy eating and physical activity, the public's risk for chronic disease and mortality is decreased and quality of life for Kansans is increased.

In support of Healthy Eating and Physical Activity, KSRE is committed to the following strategies to (1) Increase scientific understanding of the role of food and its components, and of physical activity, in improving human health and reducing the risk of nutritionally- and sedentary living- related disorders. (2) Develop and evaluate effectiveness of theory- and evidence-based materials to promote healthy eating and physical activity. (3) Identify, disseminate, implement and evaluate effectiveness of programs and messages, using theory- and evidence-based approaches to improve healthy eating and physical activity. (4) Strengthen collaborative capacity within KSRE and among communities/ organizations to promote healthy eating and physical activity.

Healthy Sustainable Communities. KSRE conceptualizes communities as place-based social systems. Further, the extent to which communities are healthy and sustainable are interrelated. A community's ability to meet its residents' needs partly determines the health of its residents. The sustainability of a community, in turn, depends on the community's ability, over time, to meet the needs of its residents. Attaining this outcome requires a systems approach, involving four, intertwined dimensions of communities: (Human Dimension, Institutional Dimension, Environmental Dimension, and Economic Dimension). Community policies and practices that are informed by research can make it easier for people to create healthy social, economic, and physical environments. KSRE faculty apply research findings through continuing scholarship, program delivery, and consulting to build a community's capacity for healthy and sustainable policies and practices.

In support of Healthy, Sustainable Communities, KSRE is committed to the following strategies to: (1) Conduct interdisciplinary research that contributes to the scholarship supporting healthy sustainable communities. (2) Provide technical assistance and educational programs to citizens seeking to make their communities healthy and sustainable places for meeting human needs. (3) Establish links between community development researchers and practitioners for cooperative efforts that result in healthy, sustainable communities.

Positive Child, Youth, and Family Development. Kansans have not been immune to trends that affect children, youths, and families throughout the nation. Of the 105 million households in the United States, 35 million include children under 18 years old. About 74% of all children in the U.S. live in families with two married parents. Another 21% live in single-mother families and 5% live in single-father families. Children from violent homes are 24 times more likely to commit sexual assault than their counterparts from non-violent homes. The largest percentage of increase in gang activity is currently in rural America. The cost of yearly incarceration of a juvenile is $100,000 and rising. Seventy-five percent are arrested within the next few years after release. KSRE, whose mission is grounded in "strong, healthy communities, families, and youth through integrated research, analysis, and education" seeks to understand and promote improved child, youth, and family development by focusing on the role of developmental settings (e.g., daycare, preschool, 4-H clubs, after-school programs, schools, faith settings, homes) and families in providing the best places to live, learn, play, and possibly raise children. The work of KSRE educators is directed towards helping families and settings to promote healthy and pro-social behavior, prevent the development of emotional and behavioral problems, and improve quality-of-life.

In support of Positive, Child, Youth, and Family Development, KSRE is committed to the following strategies to: (1) Conduct applied research and educational programs that will assist parents to make effective childrearing decisions based on knowledge of options and an understanding of consequences. (2) Provide experiential learning opportunities for children and youth to address key and emerging issues that affect their growth and development. (3) Contribute to the development of strong families and marriages across the life span. (4) Strengthen the network of education and social services that support families in raising children and developing skills of resiliency in managing difficult times. (5) Deliver and evaluate evidence-based community-development strategies for positive youth development in structured out-of-school settings (e.g., after-school programs, youth-serving organizations, clubs). (6) Monitor indicators of positive youth development and translate findings benefiting community practice.

Positive Adult Quality of Life. KSRE programs benefit adults by providing knowledge and skills regarding daily living and decision-making. This long term intended outcome addresses the continuum of economic and social needs of Kansas residents, including people with special needs and disabilities, Hispanics, urban and rural residents, populations with limited incomes, and frail elderly and their caregivers.

In support of Positive Adult Quality of Life, KSRE is committed to the following strategies to: (1) Develop and evaluate effectiveness of theory- and evidence-based materials to promote positive adult quality of life. (2) Identify, disseminate, implement, and evaluate effectiveness of programs and messages, using theory- and evidence-based approaches to improve adult quality of life. (3) Strengthen collaborative capacity within KSRE and among communities/organizations to promote positive adult quality of life.

New and Enhanced Products from Agriculture. The industrial value-added product group develops and improves technologies that utilize agricultural raw materials available in Kansas to produce higher value products. The fiber and textile program focuses on the development of

industrial value added materials and products made from natural and manufactured fibers that are essential to human health, safety and comfort, and contribute to local and national economies. Projects encompass developing biobased adhesives and composites, biodegradable plastics, optimizing soy cultivars for protein adhesive applications, characterizing and improving fiberboard products to improve integrity, appearance, moisture and insect resistance, optimizing fermentation parameters to improve cellulosic material conversion to sugars, and development of bio-refinery model systems to improve conversion efficiencies. When the BIVAP facility opens in April 2004, there will be potential for rapid growth in this area of study. Finite petroleum resources, at some point in the future, must be replaced by bio-based resources for production of many of our product and energy needs. This transition will require time and infrastructure changes along with new technology development. Development of sound science to support this transition is critical to long-term stability of our society.

In support of New and Enhanced Products from Agriculture, KSRE is committed to the following strategies to: (1) Develop new processes to modify agricultural-based materials into higher value products. (2) Enhance utilization of co-products from processing of agricultural materials in various applications. (3) Increase awareness of value of biobased products in the commercial marketplace. (4) Assess constraints and value opportunities for Kansas agricultural goods.

Conservation of Soil, Water, and Energy. Soil, water, and energy conservation are crucial to sustaining the viability of the agricultural economy in Kansas. In western Kansas, the Ogallala Aquifer supports irrigated crop agriculture that provides feed grains for a robust animal feeding industry, as well as providing water for municipal and industrial uses. The aquifer is a finite resource with recharge rates of near zero or so small as to be dwarfed by withdrawal rates. Large areas of Kansas have only a 20-50 year supply at current extraction rates. For areas of rain-fed crop production, especially in central and eastern Kansas, strategies for more efficient capture and use of water and for protection of soil against erosion are critical. There is also opportunity to better manage soils for carbon sequestration and not only sustain productivity but mitigate increasing ambient concentrations of carbon dioxide. Additionally, agricultural production of biomass is a promising source of renewable energy derived from direct burning for electricity generation and processing into chemical feedstocks and fuels. Developing a conservation approach to agricultural production of biofuels could help meet water quality and conservation goals, protect farmlands, improve biodiversity and wildlife habitat, enhance rural economic opportunities, and simultaneously contribute to national renewable energy goals. Water use and availability, the economics of water extraction and crop production, technology development and adoption, and current and new policies will determine the viability of agriculture in Kansas and the useable life of the aquifer. These issues will shape the rural landscape and socioeconomic condition of much of Kansas in the decades to come. There is effort underway to re-evaluate water use policy, make adjustments, and provide incentives for water conservation and wise use that will prolong the life of the Ogallala Aquifer.

In support of Conservation of Soil, Water, and Energy, KSRE is committed to the following strategies to develop and disseminate science-based information that will result in: (1) Reduced soil erosion and improved soil quality. (2) Increased economic water use efficiency through: improved irrigation scheduling and water management; crop selection, cropping systems, and

integrated crop, pest, nutrient, soil, and water management resulting in optimum production and improved water quality; minimizing water losses through technology adoption and improved management; developing management practices for limited irrigation production systems; increased utilization of alternative water resources (e.g., municipal wastewater, livestock wastewater); optimal use of rainfall and irrigation resources under scenarios of reduced well capacity and reduced allocation. (3) Policy review and analysis, and education of policymakers and the public that will support the long-term viability of agriculture in Western Kansas. (4) A scientific basis for making informed decisions on biomass energy production, including the tradeoffs for other land uses. (5) Improved soil carbon sequestration in agricultural lands for atmospheric carbon dioxide reductions, while improving soil quality. (6) Informed policy development to successfully implement soil conservation and carbon sequestration programs.

Improved Quality of Land, Air, and Water. Abundant clean water is crucial to the Kansas economy. Much of Kansas depends on surface water in streams or reservoirs that provide drinking water sources, municipal and other domestic and industrial uses, recreation, and livestock watering, and other agricultural uses to vast areas of Kansas. The state has several designated high priority Total Maximum Daily Loads (TMDLs) where water quality restoration actions are needed. Many of the streams are impaired for fecal coliform bacteria and dissolved oxygen (an indicator of sediment, nutrient, and organic matter loading), while many reservoirs are impaired for eutrophication. Common sources of fecal bacteria include livestock in and/or near streams, human contributions from municipal sewage systems or from individual on-site waste systems, and sometimes wildlife. Common sources of nutrient, sediment, and organic loading are from confined livestock, non-confined livestock, and cropland. Almost half (42%) of the nation's fed beef supply is produced and processed on the High Plains of Texas and southwestern Kansas, with projections of continued growth not only in fed beef cattle, but also large scale dairies and swine production, which are relocating to the region. Air quality issues are presenting major challenges for confined animal feeding, as dust and odor-related complaints by the public rise. Animal agriculture is a major source of ammonia, which when combined with other gaseous pollutants, can form respirable particulate matter and contribute to regional haze problems; Kansas is among the seven states that have the highest ammonia emissions in the U.S., according to the United States Environmental Protection Agency (USEPA). Best Management Practices (BMPs) for minimizing emissions need to be developed, tested, and delivered to producers.

In support of Improved Quality of Land, Air, and Water, KSRE is committed to the following strategies to develop and disseminate science-based information that will result in: (1) Citizens (especially agricultural producers) meeting TMDLs for surface waters in Kansas and minimizing groundwater contamination, while improving overall ecosystem health, including (a) improved livestock and cropland management and (b) restoration and protection of riparian areas and wetlands; and improved management by homeowners and urban/suburban areas. (2) Livestock and crop producers implementing Best Management Practices for waste management and utilization that will protect surface and ground water quality and air quality in Kansas; (3) Policymakers/regulators developing and/or refining water quality standards based on best scientific information; (4) Elucidation of the economic and social consequences of

alternative policies aimed at improving land, air, and water quality; (5) Improved environmental awareness among agricultural producers, youth, and the general public.

Efficient and Sustainable Cropping and Horticultural Systems. Kansas farmers produce approximately 22 million acres of wheat, corn, grain sorghum, soybeans, sunflowers and alfalfa each year, generating about $3 billion of revenue. Flour milling and livestock production has traditionally multiplied the value of crops produced. Recent construction of fuel ethanol plants in many communities has also added to that multiplier. However, the harsh and diverse climate that characterizes Kansas makes production of grain crops challenging and risky. Annual rainfall in Kansas varies from 16 inches on the western border, to over 40 inches in the southeastern corner. Evapotranspiration potentials exceed 60 inches in much of western Kansas, and heat and cold damages crops regularly. The diversity of soil type, moisture, heat, cold and altitude requires development and testing of a multitude of management approaches to support Kansas producers. Systems level integration is essential in both contemporary production and appropriate research. Synthesis of components such as crop and cultivar selection, crop rotation, tillage practices, nutrient management, weed and pest control, irrigation/water management and all their interactions, into an economic cropping system is fundamental to a modern, sustainable farm operation. Kansas farmers are constantly looking for new, less risky and more profitable alternatives (note the interest in cotton as an example). Kansas also has a diverse and growing horticultural industry composed of turf grasses (golf courses, lawns, and roadways), floral crops, ornamentals, nursery businesses and fruit, nut and vegetable production. The value of all horticultural products in the state is growing, and now approaches $1 billion annually. There is an emerging woody ornamental industry and the potential for significant growth in vegetable production, particularly in the Kansas River Valley corridor and southwest Kansas. Close proximity to Kansas City, Wichita, and Denver provides large potential markets for fresh flowers, fruits, vegetables nursery stock and sod. Interest on the part of processors to diversify production areas to spread risk could offer some unique, high value alternatives to Kansas farmers, and provide an engine for economic development in some rural areas.

KSRE is committed to support efficient and sustainable Agronomic Crop and Horticultural production systems and the states limited forested area through the following strategies to: (1) Improve the yielding ability and quality of the agronomic crops uniquely adapted to Kansas and the Central Plains, through plant breeding and genetics. (2) Develop integrated, sustainable cropping systems, which enhance the intensity, diversity and profitability of crop production. (3) Improve resource use efficiency (water, soil and inputs) within diverse and sustainable cropping systems. (4) Enhance the development of the horticulture industry in Kansas. (5) Manage afforestation and reforestation of Kansas to promote biodiversity, wildlife habitat and forest products. (6) Assist producers in improving the economic efficiency of crop production enterprises and the marketing of crops through research and educational programs.

Efficient and Sustainable Animal Production Systems. Agriculture plays a very significant role in the Kansas economy. Of the total cash receipts from agriculture in recent years, approximately two-thirds of those receipts were derived from livestock and their associated products. The production of cattle and calves is the top agricultural commodity in Kansas and cash receipts from the sale of hogs and dairy products also rank among Kansas' top 10

agricultural commodities. During 2002, Kansas ranked second in the nation in fed cattle marketings and volume of cattle processed. Significant, continued research and extension efforts devoted to improving the efficiency, profitability, and sustainability of livestock operations in Kansas are required. Similar efforts are needed in the allied food and animal product industries.

In support of Efficient and Sustainable Animal Production Systems, KSRE is committed to the following strategies to: (1) Contribute to the development of extensive and intensive animal production and management systems that are economically viable, ecologically sustainable, and compatible with safe and humane treatment of animals. (2) Contribute to the development of comprehensive systems that ensure the safe and humane transfer and processing of animals and their products into commercial products that are safe and wholesome for the consuming public. (3) Contribute to the development of viable and efficient marketing systems for animals and animal products. Substrategies: (A) Enhance understanding of livestock market supply and demand factors and their impact on livestock and meat prices. (B) Enhance understanding of factors that affect costs of livestock production and the resulting impact on profitability. (C) Improve understanding of the impact of various agricultural policy proposals on the livestock production and marketing chain's short and long-run competitiveness. (D) Improve understanding of factors that impact consumer demand for meat products. (E) Identify improved production and marketing risk management strategies. (F) Improve understanding of factors (and their relative impact) motivating structural changes in the livestock production and marketing chain.

Farm and Food Systems Management. Agricultural producers and agribusiness managers face a rapidly changing decision-making environment resulting from a combination of forces, including agricultural policy changes, globalization, technological change, and structural change across all sectors of the food and fiber industry. The increased complexity of the management environment makes it more difficult for clientele to understand the interrelationships between the decisions they make and the range of resulting outcomes. One of the most important consequences of these changes has been a significant increase in the level of risk associated with agricultural production. Risk management encompasses decision ranging from the use of insurance, forward contracts and futures markets to enterprise diversification and human resource management. Current management challenges go well beyond managing income variability through management of price and income risk. Progressive managers face difficult choices around land acquisition and debt equity management, especially as business ownership expands horizontally within and outside of families, and vertically across generations. Increasingly, farm mangers face capital decisions that play out over multiple years. Farm managers must decide among numerous options from input providers and output buyers who are seeking business alliances. As crop and livestock production has become more specialized, identification of a successful business path has become more complex than merely replicating others. Farm and agribusiness managers must adopt a more integrated view towards management if they are to successfully manage in today's complex agricultural economy. KSRE must assist managers in meeting this challenge by providing intensive management training in the use of risk management and decision making tools.

In support of Farm and Food Systems Management, KSRE is committed to the following strategies to: (1) Conduct applied research and educational programs, which will assist managers in assessing risk and developing risk management strategies for their farm, ranch, or agribusiness. (2) Provide educational programs that assist farm managers in addressing key and emerging issues in the agricultural production sector. (3) Deliver educational programs that provide farm and ranch managers one-on-one technical assistance to improve the efficiency of their businesses. (4) Develop decision support systems to meet the needs of large- and small-scale farmers and agribusinesses. (5) Conduct applied research and educational programs, which will assist agribusiness managers, including producer-owned cooperatives, improve the profitability and sustainability of their businesses.

Safe, Secure, High-quality Food Supply. An estimated 76 million cases of food borne illness occur in the U.S. each year, resulting in about 325,000 hospitalizations and more than 5,000 deaths. In addition to the loss in human lives, there is a tremendous cost associated with treatment of people affected, time off work, and recall of contaminated food products. The number of food borne illnesses reported in Kansas may be an underestimate of the real number of cases, because the state does not have an active surveillance system, and food borne illnesses are greatly under reported. Recent concerns with potential "bio-terrorism" acts targeting the agricultural sector and the food supply have also created a need for addressing these issues. The state has the challenge to protect consumers from exposure to hazards that may find their way into the food supply at any stage of food production and consumption, and to maintain and improve the safety level of raw agricultural commodities which are at the heart of the economic well being of Kansas and of the national food security system. The challenge is to sustain educational, surveillance, and inspection systems for the hundreds of food and meat processing operations, and the thousands of food service institutions, and to initiate innovative programs for the detection, identification, and prevention of food safety hazards throughout the food system. Many of the pre- and post-harvest food safety issues can impact human health, whereas others may impact our agricultural infrastructure, food supply, and economy.

In support of a Safe, Secure, High-quality Food Supply, KSRE is committed to the following strategies to: (1) Continue existing food safety programs targeting growers, processors, food service personnel, consumers, and educators to cover the whole food system from farm to table. (2) Initiate new research, educational, and extension programs covering detection, identification, quantification, and prevention of biological, chemical, and physical hazards throughout the food system. (3) Identify and address social, economic, and communications issues related to food safety and agricultural bio-security. (4) Consolidate the role of KSRE as a world leader in the fields of food safety and agricultural bio-security through a multi-disciplinary, multi-faceted approach and close cooperation with various regional, national, and international regulatory, educational, and economic entities. These strategies aim at reducing the incidence and levels of pathogens in animals, plants, and foods, and at decreasing the incidence of food borne illness through a variety of tactics.

Enhanced Nutritional Quality of the Food Supply. The roles nutrients exert at biochemical, molecular and cellular levels are being redefined according to bioavailability and toxicology constructs. Many bioactive compounds have been routinely eliminated from foods through

processing because of either objectionable sensory qualities or perceived inertness. Recent discoveries indicate that bioactive compounds have a powerful impact upon disease prevention with many even more powerful than prescribed drugs. To more fully understand this impact and to integrate bioactive compounds with nutrient research on disease prevention, researchers will need to conduct epidemiological studies relating intake of foods high in particular nutrients and bioactive compounds with specific diseases. In addition, bioactive compounds need to be tested in cell systems and animals to validate function claims and assure safety. KSRE must continue its traditional role in researching known essential nutrients of foods in terms of roles they play in optimizing health, and their availability in foods, particularly those in Kansas commodities. Assuring the presence of nutrients and bioactive compounds in our food supply to foster increased consumption should be a high priority for agriculture producers, food processors, nutritionists, educators, and consumers. The large agricultural base and the market potential of Kansas-grown grains and animal products, along with regionally produced fresh fruits and vegetables are largely unexplored from functional food and nutraceutical perspectives. A high need for multi-media educational materials about phytochemicals, specific animal products, and functional foods is warranted for the consumer and producer. KSRE scientists will determine the mechanisms by which nutrients and bioactive compounds found in fruits, vegetables, grains, oilseeds, and animal products function as promoters of optimal health. New compounds in Kansas commodities and food products will be discovered. The information currently in existence and newer findings will be disseminated to Kansans on a continuing basis for them to make informed food choice selections or to optimize these compounds in foods produced.

In support of Enhanced Nutritional Quality of the Food Supply, KSRE is committed to the following strategies to: (1) Identify effective strategies to promote evidence-based dissemination of functional food and nutraceutical concepts to consumers and professional clientele to influence positive change. (2) Design systems to preserve, prepare, and store foods and agricultural products to enhance nutrients and bioactive compounds and educate consumers about these systems. (3) Conduct research and disseminate information on the potential nutritional value, health benefits, and other risks/benefits of consuming locally grown and/or organic foods and highly processed foods. (4) Conduct research to determine the sensory attributes and consumer acceptability of functional foods. (5) Identify the cellular/molecular mechanisms by which bioactive compounds and other nutrients exert their health effects.

Table 5

Goal 5 — Resource Investments: Youth, Family, and Community Development.

Issue	Agent FTE	Specialist FTE	Extension funding $	Research FTE	Research funding $	K-State res. & ext. FTE	K-State res. & ext. funding $
Build Strong Healthy Communities	18.20	8.50	2,441,285	2.20	240,968	28.90	2,682,253
Improve Parenting Skills and Family Relations	13.25	3.05	1,348,913	1.00	187,083	17.30	1,535,996
Prepare Youth to be Responsible Citizens	58.50	8.05	5,611,858	NA	NA	66.55	5,611,858
Balance Demands of Work, Family, Community, and Time for Self	8.10	1.90	829,470	NA	NA	10.00	829,470
Develop Consumer and Financial Management Skills	8.10	1.50	829,480	0.60	99,559	10.20	929,039

Table 6

Resource Investments: Food, Nutrition, Health, and Safety.

	Issue	Agent FTE	Specialist FTE	Extension funding $	Research FTE	Research funding $	K-State res. & ext. FTE	K-State res. & ext. funding $
Goal 2	Promote a Safe Food Supply from Production to Consumption	12.10	3.00	1,253,946	2.10	1,381,515	17.20	2,635,461
Goal 3	Promote Healthier and Safer Lives	27.60	7.13	2,964,376	4.80	1,259,414	39.53	4,223,790
Goal 1	Develop New, Appealing Food Products	0.87	3.00	398,824	16.70	5,577,201	20.57	5,976,025

Table 7

Goal 4 — Resource Investments: Natural Resources and Environmental Management.

Issue	Agent FTE	Specialist FTE	Extension funding $	Research FTE	Research funding $	K-State res. & ext. FTE	K-State res. & ext. funding $
Ensure Quality and Conservation of Surface Water and Groundwater	9.60	3.30	1,060,131	23.80	6,037,104	36.70	7,097,235
Promote Community and Residential Environmental Management	13.20	5.80	1,542,947	1.00	267,365	20.00	1,810,312
Develop Systems for Improved Soil and Air Quality	4.85	2.30	660,808	0.70	236,603	7.85	897,411

Table 8

Goal 1 —
Resource Investments: Agricultural Industry Competitiveness.

Issue	Agent FTE	Specialist FTE	Extension funding $	Research FTE	Research funding $	K-State res. & ext. FTE	K-State res. & ext. funding $
Develop Efficient, Integrated Crop Production Systems	14.80	19.60	3,353,572	75.30	20,458,304	109.70	23,811,876
Develop Efficient, Coordinated Livestock Production Systems	13.80	17.20	3,211,478	55.00	18,801,777	86.00	22,013,255
Enhance the Value of Kansas Agricultural Goods	3.70	5.40	866,067	11.50	4,201,728	20.60	5,067,795
Develop Agricultural Risk Management Strategies	8.55	4.50	1,438,317	1.00	227,507	14.05	1,665,824
Develop Agricultural Technologies and Information Systems	6.40	3.40	837,298	1.60	448,004	11.40	1,285,302