

Approved: Eugene Shore 2-24-93
Date

MINUTES OF THE HOUSE COMMITTEE ON AGRICULTURE.

The meeting was called to order by Chairperson Eugene Shore at 9:08 a.m. on February 11, 1993 in Room 423-S of the Capitol.

All members were present except: Representative Lloyd - Excused

Committee staff present: Raney Gilliland, Legislative Research Department
Jill Wolters, Revisor of Statutes
Kay Johnson, Committee Secretary

Conferees appearing before the committee: Marc Johnson, K-State University
Richard Wootton, K-State University
Orlan Buller, K-State University
William Eberle, K-State University
Marsha McFarland, K-State University

Chairman Shore called the meeting to order and said the State Forestry Department had requested a bill be introduced to update forestry statutes. Representative Gatlin made a motion to introduce such a bill as a committee bill. Representative Bryant seconded the motion. The motion carried. Chairman Shore then introduced Marc Johnson, Interim Director, Kansas Cooperative Extension Service, who will give a briefing on the Extension Service.

Mr. Johnson explained the mission of the Extension Service is to provide practical information and education to address critical issues facing Kansas citizens - families, agricultural producers, individuals, business operators and communities. Mr. Johnson introduced Mr. Wootton, Mr. Buller, Mr. Eberle and Ms. McFarland who will give reports on specific subjects, attachment #1.

Richard Wootton, Associate Director of Extension, discussed program planning for the nineties. There will be some new directions taken as less effort will be given to comprehensive programs and more focus will be given to a narrower array of subjects resulting in higher quality programs.

Orlan Buller, Interim Department Head, Agricultural Economics, explained that long-range profitability is not sustainable if it degrades and depletes agriculture's resource base and deteriorates the quality of life. Extension programs offered include livestock management, pest identification and control, risk management and quality of life.

William Eberle, Assistant Director, Community Development, discussed rural revitalization. The focus is to help provide rural communities with adept leaders and effective organizational structures, job and income opportunities and access to basic facilities and services.

Marsha McFarland, Associate Professor, 4-H and Youth Programs, described conditions which place young people at risk and provided information on current programming efforts. She stressed that collaboration among the Extension Service, family and community is what makes the programs successful.

Discussion followed on specific youth at risk programs - who initiates them and how they are financed, examples of job opportunities created by rural communities, usefulness of Farm Management Association data and County Register of Deed programs.

Representative Gatlin announced there would be a sub-committee meeting on **HB 2107** (Amendments to the Kansas Veterinary Practice Act) on Friday, February 12, 1993 at 9:00am in room 423-S. Representative Rezac announced the Democrats will meet at 9:30am in Representative Sawyer's office.

The meeting adjourned at 10:05am. The next meeting is scheduled for February 16, 1993.

EXTENSION

Educational Initiatives

1993

A Report to the

Kansas Legislature

By the
Kansas Cooperative Extension Service
Kansas State University

HOUSE AGRICULTURE
2-11-93
ATTACHMENT #1



Office of
Dean of Agriculture
Director of Agricultural Experiment Station
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Extension
Systems and
Agriculture
Research
Programs

Cooperative
Extension
Service

Agricultural
Experiment
Station

International
Programs

College of
Agriculture

Academic
Programs

February 4, 1993

Dear Friends,

We are pleased with this opportunity to provide summaries of selected programs that support Cooperative Extension's educational initiatives.

Each initiative is a priority concern that grew from Extension's base programs and close interaction with County Extension Councils and local leaders. Also included is an overview of Extension's educational initiatives and special reports on program planning, rural revitalization, sustainable and profitable agriculture, and youth at risk.

Cooperative Extension is committed to strengthening its ability to identify critical issues and focus resources in areas that help Kansans prepare for economic, social, and environmental change. We are developing a strategic plan and are examining our planning and response processes. We want to position agents and specialists on the cutting edge of technology so timely, relevant, and effective responses can be made to priority needs.

We want to be accessible, responsive, and provide leadership in harnessing the agricultural, economic, and resource engines that drive the Kansas economy.

Your suggestions about these or any other Extension program are welcome.

Sincerely,

Marc A. Johnson
Interim Director

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EXECUTIVE SUMMARY

The report gives an overview of eight Extension educational issues which respond to the social, economic, and environmental needs of Kansas citizens. The initiatives are based on ongoing base programs in agricultural viability; community and economic development; family strengths and economic well-being; 4-H and youth development; leadership and volunteer development; natural resource, energy, and environmental stewardship; and nutrition, diet and health. Each Extension initiative supports issues identified by county program development committees, local leaders, and industry and organizational groups.

AGRICULTURAL SUSTAINABILITY AND PROFITABILITY

To help maintain a sustainable and profitable position in state, regional, and world markets, Extension agents and specialists organize programs that integrate production, management, and marketing procedures for the state's crop and livestock industries. Efficient and environmentally safe use of nutrients and pesticides and resource-conserving management strategies are emphasized. Adoption of quality assurance programs, proven advances in technology, and record-keeping and analytical procedures are advocated as management strategies that facilitate sustainability and profitability.

RURAL REVITALIZATION

Extension programs help rural and community leaders identify and analyze community strengths, organize programs, and develop plans for economic and community improvement. Extension educational programs help local leaders and communities build leadership and organizational skill, gather needed data, and organize community efforts. Programs focus on essential planning, business management and development, local government and services, leadership, and value-added products. Also included are community advancement programs and information referral services.

WATER QUALITY

Extension programs focus on minimizing the pollution potential of agricultural chemicals and livestock waste. Water and wellhead protection, well plugging, and domestic water quality programs have been implemented statewide. A new Farm*A*Syst strategy helps producers evaluate and protect groundwater resources. Innovative and effective livestock waste management systems are being installed and demonstrated in the Herington watershed, and farmers and ranchers are being helped to develop improved waste handling and management systems.

CONSERVATION OF NATURAL RESOURCES

Extension programs address the conservation of soil, water, and natural resources and compliance with the conservation provisions of the 1985 Food Security Act. Thrusts in conservation education include the conservation reserve program, irrigation management, grazingland management, and water-use efficiency for irrigated and dryland crops. Xeriscaping (using plants with low water and maintenance requirements) is emphasized in urban settings and landowners are encouraged to manage their riparian woodlands to protect water quality and reduce erosion.

SOLID WASTE MANAGEMENT

This initiative was developed to help communities dispose of municipal wastes safely and efficiently. Extension programs address solid waste management, wood waste utilization, and hazardous substances, and help to organize networks, share information, and involve others in waste reduction programs.

FOOD SAFETY AND QUALITY

Extension programs emphasize food safety and critical control in production and processing procedures and preventing food borne illness in homes, commercial food establishments, and child care centers. Production programs emphasize quality assurance programs for milk, beef, and swine. Small manufacturing units are encouraged to establish and use critical control points and eliminate insect, microbial, rodent, or bird contamination. Other Extension programs target cancer prevention, assisted living, and food and nutrition programs for the elderly and low-income families.

YOUTH AT RISK

Extension's efforts center on preventive programs to strengthen family and community support systems. They include programs on chemical abuse, after-school care, and educational approaches to diversity, minorities, and underprivileged youth. The objectives are to increase self-esteem, expand future opportunities, and enhance decision making and communication skills. In Finney County, minority outreach programs are helping decrease school drop-out rates and enhance multicultural acceptance in the state's fastest-growing community.

PLIGHT OF THE YOUNG CHILD

The family is the primary institution for nurturing children, caring for the elderly, and providing a healthy environment for all its members. Social and economic changes have led to new or intensified problems for families with young children, especially those with limited resources. Cooperative Extension is helping to meet this challenge through educational programs for parents in nutrition, health, and budget management.

OVERVIEW

Marc A. Johnson
Interim Director of Extension

EXTENSION INITIATIVES

Each Extension initiative was identified in consultation with county program development committees, Extension agents, and local and national leaders. The goal is to help individuals, families, and communities address critical social, economic, and environmental issues that impact individual citizens and the Kansas economy. The initiatives are:

- Agricultural Sustainability and Profitability
- Rural Revitalization
- Water Quality
- Conservation of Natural Resources
- Solid Waste Management
- Food Safety and Quality
- Youth at Risk
- Plight of the Young Child

We want each Extension program to be responsive, relevant, and timely, and to utilize the research and knowledge base of the University to help identify, understand, and solve priority problems. Consequently, Extension agents and specialists work with elected County Extension Councils to review the county and community situation, identify major problems, and set county educational goals.

Because of this interactive planning process, each Extension program is issue-based, preplanned, and presented by agents and specialists utilizing a research and technology base.

Let me emphasize a few highlights from the report:

European Corn Borer

K-State software can be used to predict corn borer infestations 2 to 4 weeks prior to needed treatments. If infestations are severe, producers can enhance yield by \$22 per acre with these recommendations; but if less severe, producers can avoid treatment entirely and save \$14 per acre.

Drip Irrigation

For commercial vegetable production, specialists have demonstrated that drip irrigation systems and plastic row coverings decrease pesticide use, input and production costs, and increase net income. Water use is reduced by at least 50 percent.

Milk, Beef, and Swine Quality Assurance

To protect food wholesomeness and maintain consumer confidence, K-State is actively promoting quality assurance programs for milk, beef, and swine. Kansas leads the nation in pork producers completing the swine quality assurance program.

Strategic Planning

Extension specialists help local leaders identify strengths, analyze options, and develop strategic plans for rural and community development. Strategic plans have been developed in 25 counties, and special economic programs for small communities have been developed in 12 counties.

Minority Outreach

Outreach efforts feature preventive programs to strengthen family and community support systems. In Finney County, 320 youth and 300 parents participate in after-school programs to reduce school drop-out rates, enhance skills, language and science career planning, and self-esteem.

FUTURE DIRECTIONS

Extension's strength lies in its ability to identify and redirect resources to critical issues that help Kansans prepare for economic and social change. Cooperative Extension is developing a strategic plan and is examining its structure and program planning process to ensure rapid and effective response to the needs of individuals, farmers, commodity and industry groups, and communities and counties.

We must commit resources in each county and area Extension office, and at Kansas State University, to programs that enhance economic and social development, protect water and environmental quality, and add value to Kansas products at home, on the farm, and in industry. That system must be accessible and responsive, and provide leadership in harnessing the agricultural, economic, and human resource engines that drive the Kansas economy.

Agriculture and small businesses are key factors that drive internal growth, add value to Kansas products, and expand the economy. Extension is dedicated to positioning agents and specialists so they can be on the cutting edge of technology and effectively assist Kansas citizens in enhancing economic and social development.

Your comments on these or other Extension programs will be appreciated.



PROGRAM PLANNING FOR THE NINETIES

Richard D. Wootton

Associate Director of Extension

The Cooperative Extension Service provides practical, research-based information and educational programs to address critical issues facing individuals, families, farms, businesses, and communities. The programs are interactive, planned with grassroots input, and organized to enhance the economy, protect natural resources, and improve quality of life. Grassroots input is critical because Extension programs are action-oriented and designed to stimulate change—changing behavior or practices, and improving social and environmental quality and the Kansas economy.

The statewide Extension network, with offices in each Kansas county, is funded by federal, state and local government and administered jointly by the Director of Extension and elected County Extension Councils. KSU Exten-

sion is part of a federal Extension system with an Extension counterpart in every state.

DELIVERY PROGRAM

Most Extension programs are relevant in either rural or urban settings for appropriate family, youth, business, and community audiences. Extension is a support system for agriculture, home and family, 4-H and youth, and economic and community development.

Collaborative relationships have been established with numerous agencies and organizations to stretch resources, enhance program impact, and better serve audiences such as minorities, the elderly, and those with limited income.

To bring about change, it is essential to identify priority issues; organize sequential, problem-solving educational approaches; and bring the program to those in need. Quality teaching methods and effective delivery play an important role in Extension's ability to deliver forceful programs in every county and community.

RESPONDING TO CHANGE

Extension programs and faculty have responded to budget cuts and emerging issues. Since 1986, 20 positions have been eliminated and other positions have been redirected to high-priority programs including value-added products, local government, DIRECT, environmental quality, limited resource individuals, health and safety, and staff development. Wherever possible, extramural funds have been sought for essential programs. There is reduced emphasis on food preparation, clothing construction, one-on-one services like timber marking and landscaping, pest scouting, and grain grading programs.

KSU's research and knowledge base is extended statewide by methods ranging from personal consultation to satellite broadcasts (via the Regents Educational Communications Center) and by workshops, demonstrations, public meetings, and short courses. Programs are organized and delivered by faculty in four KSU colleges, five area offices, and each county.

EDUCATIONAL PRIORITIES

In Kansas, educational priorities are established with significant grassroots input from elected members of County Extension Councils, research and Extension professionals, and collaborative relationships with numerous agencies, associations and organizations. The educational efforts of 266 county Extension faculty are enhanced by the work of volunteers equivalent to 114 full-time staff, valued at nearly \$1 million.

Extension programs provide technical assistance and information to improve the economic and social development of producers, processors, communities, and families. The Extension delivery network provides a timely response to critical needs that can be addressed by educational intervention and scientific knowledge, applied principles, and recommended practices.

GOALS

Cooperative Extension is establishing goals to provide guidance into the 21st Century. Selected examples include:

- Maintain a strong commitment to support competitive, profitable, and sustainable agricultural production systems in Kansas.
- Enhance economic development through community, agricultural, and family activities.
- Increase extramural funding for essential programs.
- Increase support for technology which enhances effective communication including a statewide computer network and distance learning capabilities (satellite and interactive video).
- Support programs that add value to food and non-food uses of Kansas products.
- Develop life skills for limited resource individuals and families including financial management, parenting, food and nutrition, and consumer skills.
- Enhance environmental safety through targeted programs in water quality, food safety, resource conservation, sustainable farming methods, solid waste management, and environmental education.
- Expand Extension education and problem-solving programs relevant to rural, urban, non-farm, farm, limited resource, family, community, youth, and senior audiences.
- Enhance volunteer programs for intensive one-on-one education and information delivery programs such as Master Gardeners and 4-H Leaders.
- Streamline administrative overhead by combining responsibilities, departments, or units.

This report provides an overview of Extension educational programs in Kansas. We would be happy to provide additional detail about these or any Extension program.

AGRICULTURAL SUSTAINABILITY AND PROFITABILITY

Orlan H. Buller

Interim Department Head, Agricultural Economics

Sustaining a profitable agriculture is an important objective of the Cooperative Extension Service. Kansas farmers should receive a fair and equitable reward for the labor, entrepreneurship, and capital invested in their businesses. But, long-run profitability is not sustainable if it degrades and depletes agriculture's resource base and deteriorates the quality of life. Although resources are limited, the Extension Service has organized numerous programs to enhance the sustainability and profitability of Kansas agriculture.

SUSTAINING PROFITABILITY

Extension crop and livestock programs focus on reducing chemical use and other purchased inputs without jeopardizing profit. On problem soils, the

practice of integrating variety selection with proper application and placement of lime, phosphorus, and nitrogen reduces the need for agricultural chemicals. Judiciously reducing soybean seeding rates also lowers costs. Extension specialists are demonstrating effective, economical, and environmentally safe methods for controlling weeds and managing herbicide applications. This is especially critical in areas where pesticides can contaminate ground or surface water. Using soil tests to make better lime and fertilizer management decisions is strongly recommended.

Livestock management programs include clinics to examine the fertility of breeding stock. For example, a high scoring ram increases conception rates in the ewe flock, a critical feature for small farm flocks with only one ram. Research shows that heifers that calve early in their first calving tend to wean heavier calves throughout their lifetimes. Extension specialists recommend these and other management practices to increase profits without increasing costs.

Several programs emphasize pest identification, management, and improved control methods. For example, K-State assists producers and professionals in Kansas and surrounding states to identify greenbug types and their reactions to pesticides. This reduces chemical use by avoiding the use of ineffective treatment methods. K-State computer software can be used to predict European corn borer infestations and make timely treatments. Where the infestation is light, no treatment is needed. Because horn flies are resistant to some chemicals, specialists are designing improved non-chemical methods of fly prevention and control. They are demonstrating that proven management practices can often reduce costs and the need for acquired inputs without decreasing profit.

KSU grain management programs provide cost-effective recommendations and programs for preserving grain quality during storage. Research and Extension programs demonstrate that uniform quality enhances automated procedures for handling wheat. Automation reduces the allowable range of impurities in raw materials, thus the flexibility that uniformity allows is desired.

ENVIRONMENT AND QUALITY OF LIFE

A number of Extension programs help maintain the quality of life in Kansas. An Extension entomologist identified the kinds and range of ticks that cause Lyme disease in the state and served the needs of hospitals, medical laboratories, health departments and veterinarians. Specialists and agents provide needed insect protection information to private and commercial growers of vegetables, fruits, turf grasses, shade trees, shrubs, and ornamentals. K-State cooperates with the Environmental Protection Agency and the State Board of Agriculture in a pesticide applicator training program to help certify private and commercial pesticide applicators. Training focuses on pest identification, pesticide application and use, personal protective equipment, pesticide storage and disposal, endangered species protection, ground and surface water protection, label information, and laws and regulations.

Extension crop and livestock production management programs show that improved management allows producers to reduce their use of pesticides and fertilizers and still maintain profitable production levels. This helps make agriculture sustainable and profitable without degrading soil and water resources and the quality of life.



RURAL REVITALIZATION

William M. Eberle

Assistant Director, Community Development

Many rural communities face an impending economic and social transition due to social change and loss of population, infrastructure, and jobs. Community leaders move from crisis to crisis as they watch the composition of their communities change and experience economic uncertainty. Although local leaders do their best, they often lack needed information, skills, and experience. Rural problems are complex and there are no simple solutions, but it is clear that rural people must take the lead.

Because rural communities need help, Cooperative Extension has organized an action agenda focused on three major needs.

- To solve complex problems, rural communities need adept leaders and effective organizational structures.
- Rural people need quality job and income opportunities appropriate to a globally competitive economy.
- Rural areas and local governments must provide affordable access to basic facilities and services.

ORGANIZATION AND LEADERSHIP DEVELOPMENT

Community organization and leadership programs help ensure a generation of community leaders with the organizational skills to develop new strategies for moving communities into the future.

The Kansas PRIDE program involves thousands of volunteers in hundreds of communities. It helps local citizens organize, identify community needs, and make their communities better places to live and work.

Extension leadership programs empower local people to solve their own problems. The Family Community Leadership Program provides intensive training for hundreds of local leaders. The Leadership for Sustainable Communities program focuses on leadership skills, community development, and community collaboration.

COMMUNITIES IN ECONOMIC TRANSITION

Economic development helps communities create jobs and new income by diversifying the economy and making firms more competitive.

Extension programs strengthen local decision-making and encourage long-term economic development efforts that often lead to the development of a county-wide strategic plan. Strategic plans have been developed in more than 20 counties. Economic development programs are also organized for small communities.

The DIRECT program provides information and referrals for those seeking economic development assistance. We wanted this referral service to be accessible, authoritative, and responsive. Extension analysts also provide social, economic, and graphical data sets for agents, specialists, and others involved in rural development.

Business-related programs, often conducted cooperatively with Small Business Development Centers, focus on home-based business, salesman-

ship, customer relations, and tourism hospitality. Agents and specialists also work with the Mid-America Manufacturing Technology Center to identify rural manufacturers in need of technical assistance.

LOCAL GOVERNMENT/FACILITIES AND SERVICES

Extension programs help improve the effectiveness of local governments and identify ways to enhance development, facilities, and services.

Programs are tailored to meet the needs of local governments and may include topics on finance, management, policy, and risk management. A special training program has been initiated for county registers of deeds.

Educational programs also focus on public policy decision-making, public facilities and services, rural health, rural mental health, and waste management. Using analytical models, agents and specialists help local leaders identify problems, assess policy options, and anticipate costs and benefits.

COLLABORATIVE EFFORTS

Most Extension rural development programs are conducted cooperatively with other agencies and institutions to maximize resources and minimize duplication. For example, Cooperative Extension conducts the PRIDE program cooperatively with the Kansas Department of Commerce and Housing, has signed a memorandum of agreement with the Kansas Small Business Development Centers, and actively participates in the Kansas Rural Development Council. Extension also coordinates rural leadership development activities in Kansas.



YOUTH AT RISK

C. R. Salmon

Assistant Director, 4-H - Youth Programs

The youth at risk initiative is an Extension response to pervasive conditions which place young people at risk because of unmet physical, social, and competency needs. As a state and national initiative, the vision is to help children and adolescents lead positive, secure, happy young lives while developing the skill, knowledge, and competency necessary for fulfilling, contributing adult lives; and for youth to live in families and communities which promote their positive development. Because of its history and tradition, 4-H plays an important role in reaching out to youth and families in low-income, isolated rural areas as well as in urban and suburban areas.

YOUTH AT RISK STRATEGIES

Research has shown that several factors need to be present for effective programs for at-risk youth.

Community-based

The child is seen in the context of family and community interrelationships. Social, economic, educational, cultural, and health needs of families are enhanced by a community support system. Citizens are active in identifying and addressing youth and family needs in the community.

Partnerships with Citizens

All individuals have a stake in solving significant problems and provide critical strengths, competencies, and resources. Effective programs involve both youth and adults in creating solutions and transforming the environment. In the public realm, people are accountable for the solutions they create, but not blamed for creating the problem.

Value Diversity

Effective solutions for complex problems require input from diverse experiences, perspectives, and ideas. Constructive programs engage a broad spectrum of people, community needs, and resources.

Address Actual Conditions

Successful programs address both the cause and symptoms of problems that place families and youth at risk. They focus on improving systems rather than “fixing” youth and families. They work to influence power structures, decision-making, and policy and change.

Collaboration

Effective programs cross bureaucratic lines and are cooperative with many agencies, organizations, and citizens. They minimize duplication, create quality programs, and focus resources on strategic problems.

EXTENSION'S ROLE

Kansas 4-H views its youth at risk thrust as a balanced, systematic prevention effort. Program efforts include traditional strategies such as community clubs and new approaches including special pilot programs for high-risk youth and family audiences. Extension has the potential to address all levels of the ecological model—youth, family, and community— with its staff of 4-H, home economics, community development, agriculture, and natural resource professionals in counties across the state.

Youth at risk programming efforts are helping reach new audiences with 4-H and youth programs targeted at chemical abuse, minorities and diverse audiences, after school programs for underprivileged and handicapped children, and community support for parents. Specific program examples are given later in the report.

EDUCATIONAL INITIATIVES—1993

AGRICULTURAL SUSTAINABILITY AND PROFITABILITY

To help maintain a sustainable and profitable position in state, regional, and world markets, Extension agents and specialists work directly with farmers and ranchers to consolidate production, pest protection, and marketing procedures into sustainable, profitable, and environmentally safe crop and livestock management systems. Producers are encouraged to adopt proven advances in technology and management.

CROP MANAGEMENT

Wheat Quality

Uniform quality wheat is essential because automation reduces the allowable flexibility in raw ingredients. In Kansas, the potential savings and revenue associated with producing higher quality wheat approximates \$25 million based on the cost of added gluten. Extension faculty have addressed these concerns by releasing information on the milling and baking quality of hard red winter wheat varieties, organizing grain grading schools, demonstrating the use of the single kernel hardness tester and discussing wheat quality characteristics at grain production meetings. Quantifying and enhancing the value of grain quality is the key to adding value by producers, processors, and breeders.

Establishing Alfalfa No-till After Wheat

Establishing alfalfa stands can be difficult because of the lack of soil moisture at seeding time. Since 1990, 20 on-farm action plots (stand establishment trials) have been initiated. Planting method comparisons include conventional tillage, no-till burned stubble, no-till standing stubble, and no-till baled stubble. Compared to conventional methods, excellent stands and yields were obtained with all no-till planting methods. Fourteen cooperators said they would plant alfalfa using no-till methods in the future and 11 producers have neighbors interested in trying no-till alfalfa. Potentially, planting no-till alfalfa could save Kansas producers \$4 million annually.

Soybean Seeding Rates

Historically, one bag of seed per acre, or 10 seeds per row foot in 30-inch rows, is recommended for planting soybeans. Recent research indicates that soybean plant populations could be lowered without lowering yields. Fourteen on-farm research experiments were established during 1990-1992 to verify those results and demonstrate the use of lower seeding rates to farmers. Ten field plot tours (500 people attending) and 50 crop schools (1,500 people attending) were held. Based on these demonstrated research results, recommended soybean planting rates have been lowered 30 percent. The potential savings in seed costs total \$4.5 million.

Sunflower Production

Because a sunflower processing plant is being developed in Goodland, the value of sunflowers produced in northwest Kansas increased from \$4.7 million in 1990 to \$6.1 million in 1991. To help farmers producing sunflow-

ers comply with the conservation requirements of the 1985 Food Security Act, dryland and irrigated plots were established to determine how residue production levels vary with plant population, fertilizer rate, and management. The data are needed by producers in highly erodible situations to comply with federal law. The research was sponsored by Extension, the Soil Conservation Service, National Sun Oil, and the National Sunflower Association.

Crop Share and Crop Lease

Extension specialists in all areas of the state consult with producers and landowners on farm management topics like crop share lease arrangements, crop cash rental rates, machinery costs, purchasing land, livestock share lease arrangements, and pasture rental rates. Consultations are facilitated by the use of customized or commercial computer spreadsheets. This allows producers to analyze a wide range of production and risk management scenarios. Producers express confidence in the analytical procedure and many return to use the method on multiple occasions.

Managing Plant Nutrient Use

Extension soil fertility and soil management programs emphasize efficient nutrient use. For example, field tours were held in south central Kansas to demonstrate the value of integrated liming, variety selection, and phosphorus placement programs on acid soils. On these soils, banding phosphorus with Karl wheat at planting increased yields by 14 bushels per acre and net returns by \$31 per acre. Extension programs stress the importance of knifing nitrogen fertilizer below old crop residue in reduced or no-till management systems, a technique that helps control erosion yet increases net return by \$30 per acre.

Soil Test Recommendations

Fertilizer and lime use decisions are critical to crop profitability and environmental protection. Cooperative Extension promotes soil testing (both public and private labs) so producers can make better fertilizer and lime use decisions. Last year, the KSU Soil Testing Lab increased sample volume by 14 percent to 12,000 samples. Research trials and county demonstrations show that following soil test recommendations significantly increases net returns. For example, if each sample represented 15 acres and only 25 percent of the tests resulted in improved recommendations, net returns to producers would increase by \$225,000. Samples are also analyzed for county agents and specialists (at no expense to them) to assist in making fertilizer recommendations and diagnosing plant growth problems.

Weed Management

Multi-county in-depth weed management schools were organized by agronomy and agricultural engineering specialists to promote the use of effective, economical, and environmentally sound weed management practices. Those attending the 24, two-day schools received instruction and references on weed identification, plant growth and development, integrated weed management, weed control recommendations, herbicide mode of action, interaction with the environment, pesticide application technology, and environmental issues. In 1990-1992, participants included farmers, crop consultants, chemical dealers, and noxious weed, wildlife and parks, and other agency personnel. Those attending represented approximately 700,000 acres of farmland each year.

New Technology for Cow-Calf Producers

Steps to a Profitable 21st Century is a program to ensure timely and effective adoption of new technology for cow-calf producers. Program goals include:

1. Integrated Production and Economic Management
 - Integrate all aspects of beef production with an analysis of costs and returns to maximize profitability.
 - Develop a Kansas database to allow comparison and provide guidance in goal setting.
 - Provide tools for efficient, useful record-keeping.
2. Nutrition and Forage Management
 - Reduce feed costs to optimize economic efficiency.
 - Achieve reproductive efficiency through sound nutritional management.
 - Optimize economic effectiveness through enhanced forage management.
3. Genetic Management
 - Match cow type to environmental and forage resources to produce an acceptable value-based product.
 - Optimize beef cattle genetics for value-based marketing system.

Improved Decision-Making

Programs have been instituted to enhance the record-keeping and analysis capability and accuracy of decisions by Kansas cow-calf and swine producers.

Cow-Calf Producers. Typically cow-calf producers keep minimal production and financial records, so many decisions are based on limited information and often result in economic loss. Animal scientists and economists have developed a field record book, a standardized analysis, and a software package to summarize the information. For comparison purposes, Extension specialists will provide producers with state averages for both production and financial measures of efficiency. Extension specialists worked with industry leaders to 1) redefine the goals of the Kansas Integrated Resource Management program to place greater emphasis on enhancing production and economic efficiency, and 2) targeted over 300 producers in the Kansas Farm Management Association with the goal of developing a standardized financial and production record-keeping system. A federal grant was secured to help implement this program effort.

Swine Producers. An enterprise record program implemented with 12 swine operations in 1991 has now been expanded to 30 Kansas farms. The program, cooperative with Kansas, Nebraska, and South Dakota, evaluates economic criteria related to variable and fixed costs, labor, marketing, and production. Producer records are summarized every six months and the data pooled to form state and regional averages. The database is then divided into top, middle, and bottom third of producers based on profit per hundred weight of pork produced. This allows producers to compare their record to other producers and identify strengths, weaknesses, and factors that impact profitability.

Swine Nutrition Programs

KSU specialists are evaluating the influence of nutritional inputs on the environment and economic competitiveness of the swine farm. The objectives of the USDA- supported effort are to:

1. Determine current management practices involving dietary ingredients and formulation, feed processing, feed handling and wastage, split-sex feeding and staging of diets to match age and weight of pigs.
2. Implement on-farm demonstrations and experiments to demonstrate and evaluate the potential for minimizing excess nitrogen, phosphorus, and other minerals in swine wastes.
3. Design a model for use by swine producers and county agents that will allow them to determine potential environmental benefit and cost-effectiveness of each management practice.
4. Utilize field meetings and workshops to pilot test and integrate these management decisions into a more comprehensive swine management program.

Milk and Dairy Beef Quality Assurance

A committee of veterinarians, regulatory personnel, and Extension specialists organized the Kansas Milk and Dairy Beef Quality Assurance Educational Program. Since January 1992, the 10-point residue avoidance guidelines have been presented at 34 Kansas Dairy Herd Improvement Association annual meetings. Besides producers, the 1,340 attending included 80 veterinarians, 16 marketing field representatives, and 8 regulatory personnel. Participants represented 556 dairy herds or 46 percent of the state's total.

Beef Quality Assurance

To assure wholesomeness and maintain consumer confidence in beef products, K-State is pursuing three quality assurance initiatives:

1. Specialists have surveyed and summarized current systems used by beef feedlots to monitor drug usage.
2. Specialists are exploring the use of electronic implants to permanently identify cattle from birth to consumer.
3. Beef specialists and veterinarians are developing a cow-calf quality assurance manual that will be used nationally as the reference guide for cow-calf safety assurance programs.

Swine Quality Assurance

In 1992, Pork Quality Assurance was a primary focus at K-State. This program is a national initiative of the National Pork Producers Council. Extension specialists cooperated with the Kansas Pork Producers Council to heighten awareness about food safety. Certification is achieved only if producers review the ten critical control points for drug residue prevention. With 200 producers certified, Kansas leads the nation in producers who have completed the Pork Quality Assurance Program.

Livestock Entomology

Livestock ectoparasites, if uncontrolled, would reduce the value of Kansas animal production by as much as \$200 million annually. Although more livestock insecticides are available, few are registered for more than one or

two uses. In addition, horn flies have become resistant to pyrethroids and chlorinated hydrocarbons, yet continue to be sold for horn fly control. Consequently, there is increased interest in non-chemical methods of ectoparasite prevention and control. Cooperative Extension is a leader in teaching techniques to reduce pesticide use, select and rotate insecticides for better pest control, avoid exacerbating resistance problems, and make pest management an integral part of livestock management.

Ticks and Tick-borne Human Diseases

Extension workers have identified thousands of ticks for Kansas citizens and have served the needs of hospitals, medical laboratories, health departments, and veterinarians. To do so, they compiled information on species distribution and tick bites for use in a comprehensive educational program. Information on Lyme disease in Kansas is still inadequate, but there appear to be 15 to 25 cases per year. This program has been instrumental in reducing the incidence of two (more deadly) tick-borne diseases. In Kansas, the occurrence of Rocky Mountain spotted fever has dropped from an average of 21 cases annually between 1985-1990 to six cases in 1991, and five in 1992. Tularemia dropped from an annual average of seven cases to four in 1991 and two in 1992.

Breeding Soundness for Rams

Ram Breeding Soundness Examination Clinics are held to examine the potential of a ram as a sire. Major areas involve conformation, condition scoring, physical examination, reproductive tract, semen, and tests for *Brucella avia* (epididymitis), the major cause of ram infertility. A high-scoring ram will increase the conception rate by 40 percent and lambing percentage from 70 percent to 150 percent, significantly enhancing profitability. The Ram Breeding Soundness Examination is particularly important for small producers who rely on a single ram. Under those conditions, a subfertile or infertile ram may mean financial disaster.

Heifer Evaluation

Heifers that calve early in their first calving season tend to calve earlier and wean heavier calves throughout their lifetimes than do later-calving heifers. Based on actual weaning weights, the most productive beef cows are those that conceive early for their first calf, so the HERD program was developed to promote management techniques that enhance early heifer conception. Those techniques include 1) Group feeding heifers according to the target weight concept, 2) Scoring of the reproductive tract, and 3) Melengestrol Acetate (MGA) Prostaglandin (PGF) Heat Synchronization for Artificial Insemination. Other features include pelvic area measurements and ultrasonic determination of pregnancy, fetal age, and fetal sex.

PEST MANAGEMENT

Greenbug Workshops

Insecticide-resistant greenbugs have been found in 11 Kansas counties and three neighboring states. Also, a greenbug, biotype I, which attacks previously resistant sorghum hybrids, has been found in 12 Kansas counties and three neighboring states. Consequently, there was standing room only when 200 people met in Garden City to attend an update for county Extension agents, crop consultants, aerial applicators, and seed dealers on how

greenbugs react to pesticides and sorghum hybrids. Extension agents, specialists, and 11 speakers from five states reported on topics ranging from the history of the greenbug to the molecular genetics of greenbug resistance. Growers were informed they could send greenbugs to KSU for identification and thus avoid ineffective means of control. Meeting sponsors included Cooperative Extension and 17 seed and chemical companies.

European Corn Borer

KSU-developed computer software is being used to predict European corn borer infestations 2 to 4 weeks before treatment is needed. Where corn borer populations are heavy, growers can enhance yields by \$22 per acre using these recommendations. Where populations are less severe, producers can often avoid treatment entirely, saving \$14 (or more) per acre. In 1993 entomologists will produce a satellite-delivered program on management of European corn borer. The hour-long program will be aired after corn is planted but before first generation corn borer management decisions have to be made.

Stored Grain Management

Studies have shown that stored grain managers improve their profitability about \$ 0.07 per bushel when they receive Extension-based information on preserving grain quality during storage. A newly initiated Extension program seeks to educate stored grain managers by providing information at the point of sale. Cooperating grain elevators distribute fliers to the target audience, individuals offering insect-infested grain for sale.

Pesticide Applicator Training

This training program is an interdepartmental, interagency, and industry effort to train private and commercial pesticide applicators. Topics include pest identification, pesticide application and use, personal protective equipment, pesticide storage and disposal, endangered species protection, ground and surface water protection, label information, and laws and regulations. In 1992, 850 commercial pesticide applicators and 1,723 private applicators were certified for the first time; also 1,327 commercial and 798 private applicators renewed their certification.

Fall Armyworms

In mid-May, 1992, farmers began calling county agents in southeast Kansas about serious armyworm problems in wheat. In many fields the leaves were gone and the insects were feeding in the heads. Over the next 2 ½ weeks agents in eight counties made 200 field inspections, handled 1,060 phone calls, prepared 14 news articles, and participated in 21 radio and television programs, all related to the armyworm problem. As a result, agents persuaded many farmers that chemical treatment was not warranted. These recommendations saved about \$1.15 million, which is the cost of treating 107,000 acres.

Horticultural Entomology

Cooperative Extension is targeting increased effort in the area of horticultural entomology. Areas of emphasis include insects associated with the production of vegetables, fruits, turf grasses, shade trees, shrubs, ornamentals, and greenhouse and nursery crops. The objective is to provide timely pest protection information to commercial growers. County Extension

personnel will also be trained and have educational material for commercial growers.

HORTICULTURE

Drip Irrigation

KSU research shows that vegetables can be grown with smaller amounts of water and pesticides by utilizing drip irrigation systems and plastic row coverings. Through this technology, pesticide use is diminished and water use is reduced by at least 50 percent. This decreases input and production costs and increases net income for producers.

Fruit Tree Plantings

As new fruit tree plantings are made, the use of tree size controlling rootstocks result in smaller trees and reduced pesticide use. Based on Extension recommendations, over 90 percent of fruit tree plantings made during the past 5 years have been developed using semi-dwarf trees and drip irrigation to improve orchard management and conserve water. During 1992, over 200 Kansas fruit and vegetable growers observed this new technology in grower tours and at research sites.

Cut Flowers

The sale of fresh or dried flowers is a growing industry in Kansas. In 1991-1992, new technology helped extend the life of cut peonies and double the volume and average return to growers over a two-year period. Fresh-cut as well as dried flowers are now sold through farmer markets, roadside stands, and to wholesale and retail florists. In 1992, 84 Kansas growers grew cut flowers compared to fewer than 5 in 1990. K-State is researching adapted flower selections and biological and cultural pest controls. The Kansas Greenhouse Growers Association, K-State, and the State Board of Agriculture are collaborating to determine sales volume and value for the cut flower industry.

FARM MANAGEMENT

Excellence in Management Workshops

These five-state Extension workshops (Kansas, Colorado, Oklahoma, Missouri, and Nebraska) are designed for top producers. They will address risk management related to decreased government payments and increasing environmental, labor, and food safety regulations. Conference participants will develop marketing and machinery-equipment replacement plans from case farm studies in conferences in Kansas and then in Colorado.

Risk Assessed Marketing (RAM)

Recent cuts in target prices and government payments have caused many growers to consider different methods of managing price and yield risk. The field-tested RAM approach is based on an integrated, written marketing plan and helps growers and lenders offset some of the loss of government payments. Every marketing decision—forward contracting, remaining in a cash position or no decision—is risk assessed. Marketing strategies include puts, calls, synthetic puts, forward contracts, hedges, equity, crop insurance, and government programs. A grower who does not forward contract assumes the risk of a price decline. The grower can either assume the risk or pass it on to a third party. Growers gain problem-solving experience using a case farm

approach. They apply marketing and risk management strategies in developing an integrated marketing management plan.

RURAL REVITALIZATION

Because rural Kansas has faced declines in population, economic base, and infrastructure for years, Cooperative Extension has organized programs to help rural and community leaders identify and analyze community strengths, organize action programs, and develop strategic plans for economic and community improvement. The emphasis is on developing leadership skills, gathering needed information, and organizing self-help programs.

RURAL AND COMMUNITY DEVELOPMENT

Community Development

Cooperative Extension has assisted in organizing economic development strategic plans in more than 20 counties and special economic development programs for small communities in 12 counties. More than 450 communities have participated in the Kansas PRIDE community improvement program over a 22-year period. The 90 to 100 communities that participate each year undertake about 2,000 community projects and involve 50,000 volunteers. The Kansas DIRECT program provides information and referral assistance to communities and individuals with economic, business, and rural development needs. DIRECT responds to about 1,200 requests for assistance each year and has helped in creating 2,000 jobs and in starting or expanding 500 businesses.

Kansas PRIDE Program

The Kansas PRIDE program is a self-help community development program. The program, co-administered by Cooperative Extension and the Kansas Department of Commerce, is a 22-year example of a unique working relationship between a state university, a state agency, and the private sector. It develops a local organizational and leadership structure for community-wide volunteer action.

Kansas DIRECT Program

The Kansas DIRECT Program was initiated in 1987 as a single-point-of-contact for individuals and communities searching for assistance in economic, business, and rural development. A single phone call (913-532-7987) provides access to information, expert referral, and resource coordination within Kansas and nationally. DIRECT responds to more than 100 new requests for information or assistance each month that often result in new employment and income opportunities in Kansas communities. The DIRECT office also maintains a variety of data resources and provides data analysis for Extension's economic development educational efforts.

Economic Development Strategic Planning

Creating Economic Opportunities is a long-term educational program for developing a strategic plan for economic development for counties, cities, or regions by an officially organized group of local leaders. It includes organizational development, environmental scanning, special studies, and strategic planning. The program strengthens local decision-making, provides an information base, and reduces the need for outside assistance. The program is flexible but requires a significant commitment by participants.

Take Charge

Designed for small communities, this economic development educational program enables community leaders, with help from Extension agents and specialists, to evaluate community strengths. Participants assess their community, analyze development alternatives, select the most appropriate option, and develop a plan of action through a series of planning development activities.

For example in Atchison, the Extension Program Development Committee, Area Chamber of Commerce, and County Industrial Development Committee jointly assessed needs of area businesses for educational assistance in economic development. Training in customer relations and tourism hospitality were determined to be priority needs. For employee convenience, Extension personnel provided this training in a series of sessions. Developing a county-wide strategic plan for economic development was also identified as a priority. Forty community leaders were assisted in a "learn by doing" process that resulted in a long-range economic development plan for the county.

Social and Economic Data and Analysis

Community economic analysis and needs assessment data are developed as an integral part of Extension community development programs. Examples include retail trade pull factor, economic strength index, retail business ratios, and changes in employment. The studies help local leaders make informed decisions and provide basic data for use in community and economic development efforts.

Business Management and Development

Extension programs are often cooperative with Small Business Development Centers and address topics related to economic and community development. The home-based business program assists those interested in starting or operating a business out of their home. In Kansas, many such businesses add value to agricultural products. Tourism hospitality and customer relations are two high-demand educational programs. Tourism hospitality strengthens customer relations and the promotional skills of managers and employees who serve tourists and travelers. Programs in customer relations help businesses compete by improving their ability to provide quality service.

Apparel and Textile Industry

The apparel and textile industry in Kansas employs 4,204 individuals with a payroll of \$73,085,000. Cooperative Extension provides a source of networking and technical service for more than 70 apparel and sewn product manufacturers in the state. Included in this educational outreach program is a directory of manufacturers (updated annually) linking faculty as advisors to industry.

Value-Added Foods

Specialists in meats, food systems, food engineering, post-harvest technology, and marketing provide help to Kansas companies seeking technical assistance in quality assurance and developing or marketing new foods. Information about labeling, ingredients, packaging, and food safety is a prime interest. Specialists cooperate closely with the Kansas Value-Added

Center and, in just two years, helped Kansas companies launch two dozen new food items which carry the "FROM THE LAND OF KANSAS" trademark. A KSU value-added food product development laboratory helps small companies experiment with new formulations and make trial batches of new products. Cooperators can also obtain accelerated shelf-life testing of processed food and training in quality control instrumentation.

Local Government/Facilities and Services

Extension programs help local governments address increased demand for services in the face of diminishing resources. Educational programs in finance for local government address problems of auditing, budgeting, cash-flow analysis, fiscal capacity analysis, financial control, and financial policy. Extension's comprehensive risk management education program is directed at techniques for risk identification, assessment, financing, and avoidance. For issues such as rural health care and waste management, Extension helps local governments develop effective policies related to levels of service and finance.

Technology Development

A new program offered by Engineering Extension and Extension Community Development is a partnership with the Mid-America Manufacturing Technology Center (MAMTC). MAMTC is responsible for assisting Kansas industries to adopt new technology and improve their competitive position. Extension specialists are working with county agents to identify the needs of local manufacturers and communicate them to MAMTC.

LEADERSHIP DEVELOPMENT

Community Leadership Development

This program helps develop a cadre of leadership for Kansas communities. It teaches leadership but also instructs and motivates leaders to deal with community development issues. Each leadership program is adapted to meet individual community needs with educational components selected from a wide range of topics.

In Thomas County, Extension agents and specialists and the Colby Chamber of Commerce organized a leadership curriculum and recruited a leadership class for Thomas County. Ten class members participated in an all-day, once-a-month leadership class for five months and interacted with city, county, and state government officials. Topics included leadership, leadership styles, local and county government, education, and businesses and places of interest. Subsequently, one class member became a member of a local hospital board, one became a member of the city council, six became members of the Thomas County Strategic Planning Committee, and the class became the committee sponsoring a new leadership class.

Youth Leadership—Rural Revitalization

A youth leadership project has been implemented to enhance the ability of youth to improve the rural communities in which they live. This educational program helps develop personal skills in understanding self, communicating, getting along with others, learning to learn, making decisions, managing resources, and working with groups, especially youth groups.

Teen Leader College

Youth ages 14-18 also gain leadership skills and training opportunities through the Kansas 4-H Teen Leader College. This program prepares teens to serve as 4-H project leaders, organizational leaders, and camp counselors. Further training provides the opportunity to develop skills in leadership styles, networking, public problem analysis and policy setting, the art of educating rather than advocating, and teaching methods and techniques. Graduates are certified as trainers for Family Community Leadership teams, which enhances their ability to strengthen community life.

Multicultural Diversity

Kansas State University and Garden City Community College teamed up to share insights from southwest Kansas' ethnic diversity on the first-ever Five-State Multicultural Conference. Western Kansas has not been thought of as a center of cultural diversity, but immigrants from Southeast Asia make up more than 10 percent of the Garden City's 25,000 people. Another 25 percent are Hispanic, and Anglos comprise just over half of the population. Garden City may be a window to the possible future of rural and small-town America. The conference was first conceived as a means of training KSU Extension personnel who are encountering new challenges with non-traditional audiences. However, it quickly grew to encompass social service, law enforcement, health care, business, educational and religious fields. Another conference is scheduled for March, 1993.

RURAL HEALTH

Kansas Rural Health Project (KRHP)

This is a cooperative effort between KSU, the KU Medical Center, other Regents institutions, public agencies, and professional associations. The objective is to improve rural health care through education, community service, and research. The professional education component emphasizes a curriculum that will produce medical professionals with a thorough knowledge of the rural environment. The community service initiative will include the effort of Cooperative Extension, Area Health Education Centers, and other government agencies. It includes programs to improve the health status of rural Kansans and the capacity of the rural health care delivery system. The research component focuses on a systematic understanding of health care delivery in rural Kansas and the central United States.

WATER QUALITY

In its statewide initiative on water quality, Cooperative Extension has focused on minimizing the pollution potential of plant nutrients, pesticides, and animal waste. Programs have also been instituted to test and protect domestic and rural water supplies and encourage the adoption of best management practices. Well-plugging demonstrations were organized in nearly every Kansas county.

PLANT NUTRIENTS AND PESTICIDES

Managing Plant Nutrients

The focus of the nitrogen management educational program is to prevent potential contamination, especially in areas of shallow groundwater, light-

textured soils, and irrigated crop production. This is accomplished through in-depth management schools for producers, fertilizer dealers, and interested groups; soil test recommendations and reports; and assorted soil fertility and nutrient management publications. Farmers are encouraged to test their soils for available nutrients, residual nitrate, and apply fertilizer judiciously.

A 1990 chemical use survey shows that Kansas farmers apply 117 pounds of nitrogen per acre for corn as an average. This is a conservative rate since the average yield of corn in 1990 was 130 bushels per acre. If soil tests did not credit the nutrients available from manure, soil nitrate, and the previous crop, the application rate could easily have averaged 135 pounds per acre. For corn in the equus beds, such tests have the potential of reducing the fertilizer rate by an average of 45 pounds per acre.

Soil Fertility and Soil Management

Water quality protection is an important emphasis in Extension programs in soil fertility and soil management. The value of using nitrogen best management practices to enhance water quality was presented at 23 meetings, schools, and field days with an audience of 1,400. Best management practices for nitrogen were also emphasized at eight 2-day soils schools for producers, consultants, and fertilizer dealers. In addition, increased emphasis is being placed on animal waste management. In a state with large numbers of livestock, improper storage, handling and utilization of animal wastes can pose significant environmental risks.

Pilot Projects in Nutrient Management

The Cooperative Extension Service has established several pilot projects in water quality and nutrient management. A hydrologic unit project in the Webster Creek area is targeting nutrient management. Two new demonstration and research projects are focused on calibrating residual soil nitrate tests. Funding for the two projects came from the Agricultural Experiment Station and EPA Section 319 funds through the Kansas Department of Health and Environment and from the State Conservation Commission. These projects are expected to strengthen the research base for the residual soil nitrate test.

Pesticide Management—Delaware River Basin

For the Pesticide Management Area (PMA) in the Delaware River Basin, Extension personnel served on the technical advisory committee and advised the group on water quality control, weed control, and potential practices for reducing atrazine in surface waters. The Glacial Hills Resource Conservation and Development District will submit a non-point-source pollution management plan for the area. Extension specialists report that high priority practices for producer adoption include: 1) Foliar application of atrazine premixes rather than soil application, 2) Incorporating atrazine on clean tilled soils which are able to meet the residue requirements of the 1985 farm bill, and 3) Applying atrazine before April 15 to avoid the high runoff period.

ANIMAL WASTE AND ENVIRONMENTAL QUALITY

Livestock Waste

Cooperative Extension has revamped a program in livestock waste management through a project to demonstrate innovative livestock waste management systems funded by EPA and the Kansas Department of Health and Environment. Funding will be used to install and demonstrate livestock

waste management systems in the Herington Lake area. Other Extension activities include individual site visits and plan development for at least 20 Kansas producers; intensive coordination efforts concerning Kansas livestock waste rules and regulations; and targeted educational meetings in livestock waste management for producers.

Environmental Quality—Swine

The quantity and quality of swine waste is influenced by nutrition and management practices. Cooperative Extension, with a USDA grant, is evaluating the impact of nutritional inputs on environmental quality and competitiveness on the swine farm. The objectives include: 1) Determining current management practice; 2) Implementing on-farm demonstrations and evaluating the potential for minimizing the mineral nutrients in swine waste; 3) Designing a model that will allow producers to determine the environmental benefit and cost of each management practice; and 4) Integrating effective management decisions into a comprehensive swine management program for producers.

WATER QUALITY

Well Water and Wellhead Protection

Cooperative Extension, in cooperation with the Kansas Farm Bureau and other agencies, initiated a statewide well-plugging program. They report that 5,000 individuals attended 175 well-plugging demonstrations in 100 participating counties. In addition, 40,000 bulletins were distributed, numerous well-plugging exhibits were displayed at county fairs, and several civic and service groups plan to plug abandoned wells as a community service project. Following the demonstrations, citizens are encouraged to plug abandoned wells on their own farmsteads. The Extension Safe Wells for Kansas Program emphasizes that private water users are largely responsible for the safety of their drinking water. It is estimated that there are about 500,000 abandoned wells in Kansas.

Farm*A*Syst

Farm*A*Syst is a new Extension program being adapted to Kansas to help rural residents evaluate and protect groundwater resources. The program consists of a series of 12 worksheets that help farmers evaluate farmstead structures, practices, and site vulnerability to groundwater contamination. Completion of the worksheets will help rank potential sources of contamination on the farmstead.

Riparian Forest Management

Educational programs implemented by Extension foresters help protect riparian forest land and encourage tree planting along streams. Targeted to state and federal agencies, watershed boards, and river basin advisory personnel, the program is having a significant impact on planning procedures and federal, state, and local cost-share programs. Riparian forests or plantings act as a chemical and nutrient filter for runoff from adjacent fields. Riparian filters are a relatively inexpensive way to help solve existing or potential water quality problems.

Water Quality Thrusts in South Central Kansas

Counties in south central Kansas have been active in water quality educational programs in 1992. Examples include:

Abandoned well plugging demonstrations were carried out in 16 of 19 south central Kansas counties where more than 1,000 people attended 35 well-plugging demonstrations. Participants are reporting the plugging of abandoned wells, both hand-dug and drilled, that were previously forgotten or ignored. The effort has made an impact on water quality in the Equus Beds, where Wichita obtains 60 percent of its water supply.

South central Kansans also learned about water quality, water testing, treatment options, preventing contamination, well construction techniques, waste storage and disposal of household hazardous waste, safe use of agricultural chemicals, and livestock waste management that complies with pertinent laws and regulations. The programs were developed by agents and Extension program development committees cooperatively with other county agencies and organizations.

Methods used to reach cooperators included school enrichment programs for elementary school children, distribution of water test kits, interpretation of test results, volunteer leader training on household hazardous waste and ensuring safe drinking water, individual consultation, booths at trade shows, presentations to civic and community organizations, and newspaper and television reports.

Domestic Water Quality

Programs in domestic water quality focus on testing private wells, agricultural best management practices, and wellhead protection. This 5-year program impacts numerous audiences.

Water Tests on Private Wells

Eighty counties conducted media campaigns, provided sampling kits, and promoted the testing of private wells. Follow-up meetings helped citizens understand their water test reports and how to correct water quality problems.

Best Management Practices

More than 6,000 agricultural producers attended public meetings each year to learn about best management practices which reduce chemical contamination of ground and surface water.

Health Department and county Extension offices distribute more than 100,000 Extension water quality publications each year. Because of Extension programs promoting testing of domestic wells, private laboratories report a significant increase in their domestic water testing business.

PUBLIC POLICY

Environmental Protection

Cooperative Extension is participating with a variety of other agencies and organizations in public policy education. Eighty counties are participating in the Local Environmental Protection Program. In this program, 23 counties have adopted a sanitary code. The other counties will be adopting a sanitary code in the next few years. Seven counties have submitted non-point-source management plans covering an estimated 1,500,000 acres. Extension specialists played a vital role in facilitating public comment on the formation of the first pesticide management area established in the nation.

CONSERVATION OF NATURAL RESOURCES

With 12 million highly erodible acres, falling water tables in many areas, and the need to comply with provisions of the 1985 Food Security Act by 1995, conservation of soil, water, and natural resources is a priority concern of many Kansas farmers and farm organizations. There is renewed interest in using riparian tree plantings to enhance water quality and diminish erosion.

RESOURCE CONSERVATION

Conservation Reserve Program (CRP)

The Kansas CRP educational program is one of the best in the nation. Nationally, Kansas ranks second in contracts, third in acres, and has an enviable record of accomplishment. Kansas farmers, with assistance by Cooperative Extension, Soil Conservation Service, and Wildlife and Parks, have successfully seeded 98 percent of the 2.8 million acres committed to CRP in the state. The key to the success of the educational program has been promotion of proven cover crop, seeding, and management practices. Economic and management guidelines are being developed so farmers can keep as much highly erodible land in permanent vegetative cover as is economically possible.

Irrigation Management—Lower Republican Area

Irrigation in Republic, Cloud, and Clay counties is important to corn producers. However, due to diminished water releases from the Harlin County Reservoir in Nebraska, irrigation has been reduced and farmers are considering alternative crops. Extension economists helped producers in the 42,448-acre Kansas Bostwick Irrigation District make sound cropping decisions by comparing the returns to corn and other adapted crops under reduced irrigation regimes.

Grazingland Management

This program is directed at effective decisions on controlling costs, maintaining animal performance, and improving the grazing resource. Tours, demonstrations, and workshops are used to deliver practical management programs tailored to local conditions. (Drought was a factor in four of the past five years.) As a result of this effort, producers have adjusted stocking rates, improved livestock watering facilities, cross-fenced pastures, and are addressing riparian area concerns in their grazing management programs. Future benefits will include more rapid recovery from drought, better wildlife habitat, and flexible management programs.

Rainfall Simulation and Erosion

Some 127 million tons of topsoil are lost to erosion each year in Kansas, reducing productivity and polluting streams and lakes. Extension specialists used a rainfall simulator to heighten awareness and demonstrate conservation practices. More than 2,000 people attended the 37 rainfall-erosion demonstrations. Of 300 producers who completed a survey, 98 percent were impressed by the demonstration; 42 percent thought they would change their farming practices; and 39 percent said they would consider changing their farming practices to reduce erosion. The remaining 19 percent did not expect to change because they had already controlled erosion.

Water Conservation Data Base

The KSU Computer Systems Office and Weather Data Library, with USDA funding, has collected and disseminated drought and water conservation information for farmers through various media including print, meetings, a satellite broadcast, and full-text databases. The full-text database includes 325 articles (approximately 2,000 pages) collected from Kansas and other states. The database has been published with other collections on a compact disk entitled Agricultural and Life Sciences, with over 50,000 pages of information on a variety of agricultural and Extension topics.

Low Maintenance Landscaping

Xeriscaping (using native plants that require less water and less maintenance) was the focus of a 60 minute broadcast September 9, 1992, on KTWU-TV, Topeka; KOOD-TV, Bunker Hill; and on the Wichita State University cable channel. The KSU Extension Communications production included statewide coverage and reached thousands of Kansas households. A condensed version has been distributed to stations for repeat broadcasts.

Water for Turfgrass

The amount of water used for turfgrass is a serious concern in many urban areas. KSU turfgrass researchers have worked with the City of Wichita and Johnson County water districts to reduce water waste. Research has shown that excellent lawns can be maintained with 50 percent less water in many instances. K-State has initiated a turfgrass water use study that incorporates a computerized weather station for automatic data collection and application to municipal water use problems.

Energy Conservation

For over a decade, Engineering Extension has helped Kansas energy consumers conserve energy. Clients range from homeowners and tenants to businesses and industries. Through individual assistance and specialized training, energy consumers save energy and reduce costs. In addition to a broad audience of energy consumers, targeted groups include those with low incomes and state agencies that operate and maintain buildings.

Weather Data Library

The Weather Data Library collects, processes, and archives weather information for clientele throughout the state. Requests for information come from the media, Extension personnel, researchers, agricultural interests, city managers, engineers, lawyers, and others. Some 1,500 requests for historical weather information were filled in 1992. Research to model soil moisture and drainage patterns and to develop software to evaluate the economic advantages of irrigation and cropping systems is also underway.

FOREST MANAGEMENT

Forest Stewardship Program

The stewardship program, administered by State and Extension Forestry, is a multi-agency effort to encourage landowners to properly manage riparian forests and re-establish trees along streams and rivers. The objective is to increase profits from timber products, improve water quality, control erosion, and reduce chemical and nutrient runoff. More than 300 landowners, representing 7,000 acres of riparian forests took part in this educational and

technical assistance program. Cost-share funds totaled \$160,600 and covered 70 percent of the cost of required tree plantings and multi-benefit forest management practices.

Conservation Tree Planting Program

Low-cost trees and shrubs offered by State and Extension Forestry to Kansas landowners help conserve and improve the condition of our natural resources. Tree plantings are used to produce future forest products, improve wildlife habitat, control soil erosion, improve water quality, stabilize streambanks and clean the air. Over 1,000,000 conservation trees and shrubs are planted each year and provide a significant economic and natural resource benefit.

Field Windbreaks

A major forestry effort in western Kansas is the establishment of new and renovation of existing field windbreaks. Educational programs for landowners focus on the need for windbreak plantings to control wind erosion and increase crop yields. In addition, demonstrations of renovating field windbreaks have been successfully completed. The concept of field windbreaks as working trees which enhance current agricultural practices is stressed.

SOLID WASTE MANAGEMENT

Kansans are increasingly concerned about the impact of waste on the environment. This recent initiative helps communities find safe, efficient ways to dispose of residential and commercial waste. Many landfills are reaching their capacity and new landfills face strict regulation and public opposition.

Solid waste management problems are growing rapidly. For example:

- U.S. municipalities generated 160 million tons of municipal solid waste in 1989;
- Kansas generates 1.6 million tons of solid waste annually;
- Local landfills are closing because they do not meet new standards or are running out of space;
- Siting new landfills in or near the communities they serve is becoming increasingly difficult.

“Are We in a Garbage Crisis?” is an Extension program which identifies the content of today’s household waste and the biodegradability of common products in household trash and landfills, and highlights the current waste disposal situation in Kansas. This helps consumers understand the need to reduce, reuse, recycle, reject, and respond.

Wood Waste Utilization

State and Extension foresters and resource district conservationists are developing a comprehensive plan to utilize rather than burn or dispose of wood wastes in landfills. Grinding, composting, or chipping wood waste for use as landscape materials or livestock bedding greatly reduces the amount of wood waste hauled to landfills. Additionally, usable logs can be cut into rough lumber with a portable sawmill and sold to supplement farm income.

Hazardous Substances

Engineering Extension provides a critical service in helping industry

minimize and manage hazardous substances. The industries served by the program have benefited through reduced disposal costs. Environmental quality has also been enhanced by reducing the amount of waste produced. Through a partnership with the Kansas Department of Health and Environment, Engineering Extension provides technical assistance to hazardous waste generators throughout the state.

Enviroshopping

This Extension program teaches families how to reduce the amount of waste generated by decisions made in the marketplace. The program focuses on how to build networks with adult and youth groups, communities, and government agencies; share knowledge with others through exhibits and public programs; and involve neighbors and friends in waste reduction programs.

FOOD SAFETY AND QUALITY

A safe food supply is a concern to many consumers. Cooperative Extension educates both consumers and producers about residue avoidance, critical control points, and food safety in homes, small businesses, day care centers, and restaurants. Extension programs also assist with cancer prevention, assisted living, and food and nutrition programs for the elderly and low-income families.

FOOD SAFETY

Food Safety in Foodservice: Public Policy Options

How should we protect the health of consumers when dining out? This question was the basis of 16 public policy education forums conducted by specialists from Extension and the Kansas Department of Health and Environment. The forums, partially funded by a USDA grant, provided diverse audiences with factual information about consumer health and an opportunity to assess alternative policy choices and analyze their consequences. Participants included 600 food service managers, dietitians, cooks, regulatory officials, consumers, and producers. They called for greater emphasis on food service regulations and more training for those in commercial and institutional food services, and reported that the forums significantly increased their ability to make informed food safety decisions.

Hazard Analysis of Critical Control Points (HACCP):

Models for Small Locker and Meat Processing Plants

The HACCP principle is advocated by federal agencies, food safety experts, and industry representatives to minimize food safety risks. The HACCP concept calls for identifying and controlling important operational points for preventing food-borne illnesses. Larger corporations regularly implement quality assurance programs. However, small locker plants and meat processors may not be familiar with HACCP principles or may lack the necessary technical and financial resources. Cooperative Extension works with such plants to help them develop individualized HACCP plans and reduce potential microbial, chemical, or physical hazards. This minimizes risk and enhances financial opportunity because many buyers require HACCP programs for any product they purchase.

Pork Quality Assurance

The objective of this three-level program is to eliminate drug or chemical residues in pork products. Major emphasis is on withdrawal times for drugs and pesticides and avoiding residues due to contamination of feed, water, or environment. Sulfa residues are the most common but the number of carcasses containing residue is decreasing each year. This quality assurance program is helping to eliminate residues from pork products and to increase consumer confidence that pork is a safe, drug free, wholesome product. Kansas producers lead the nation in completing the Pork Quality Assurance program, even though the state ranks 10th in total swine numbers.

Food Safety and Flour Milling

Grain science specialists have cooperated with the Association of Operative Millers to produce three videotapes on good manufacturing practices in grain processing, a video on the proper receipt and handling of fumigated rail car shipments, and a book entitled *Sanifacs: A Collection of Food Protection Design Facts*. The book covers equipment and structural design features which eliminate or reduce insect, microbial, rodent, or bird harborage and reduce the potential for contamination. Programs to ensure a safe and quality food supply are a continuing educational thrust.

Wheat Quality, From Field to Table

This service course has been organized for use with Extension faculty, the American Feed Industry Association, and on-farm feed manufacturing operations. Topics include nutritional and end-use properties of processed grain, good manufacturing practices, drug residue problems associated with medicated animal feed, and other concerns.

Food Safety Residues

Mistakes made in supplying medicated feed may create unwanted residues in large numbers of cattle. Extension programs are directed at preventing such accidents and providing procedures to follow if accidents occur. The program focuses on management skills, operational procedures, complete records, and notifying the proper authorities. Those violating residue standards for meat are notified by regulatory agencies. To clarify procedures, prevent misunderstanding, and implement corrective measures, those individuals are offered help from Extension specialists. Fortunately, the need for this program has diminished significantly and will be replaced with other health programs.

Safe Food for Children

Because young children are vulnerable to foodborne illnesses, Extension specialists, through a USDA grant, are preparing lessons on food safety for child care providers. The lessons are pilot-tested through the Child Care Association, Inc. in Wichita. The project is cooperative with Kansas LEAN, a coalition of 15 collaborating community agencies and businesses. Lesson materials prepared by Extension include five videotape programs featuring food safety and Mike the Microbe on shopping for safe food, cooking and handling food safely, storing food safely, and kitchen and personal cleanliness. A nationwide satellite training video conference for child care providers will be held in April 1993.

Food Safety and Quality—Youth Programs

Fifty-one teams and over 200 participants competed in the 1992 Kansas State Fair Home Economics Quiz Bowl on food safety and foods and nutrition. Resource materials were prepared by Extension and USDA specialists. Participating youth learned research-based information about food safety and quality including microorganisms and foods, refrigerator, freezer, and cupboard storage, and home canning. The first and second place teams were awarded educational travel scholarships by the Kansas Extension Homemakers Council.

FAMILY STRENGTHS

Estate Planning

Extension specialists are helping Kansans with educational programs in estate planning. *Estate Planning: The Basics* is a five-part series on getting started with estate planning, wills, and probate; gift, estate, and inheritance taxes; trusts; gifts; life insurance; and annuities. Individuals have different objectives regarding care of dependent family members and the use, conservation, and disposal of property at death. This Extension program helps people invest time and money in an estate plan to avoid the confusion, delay, expense, and misunderstanding that can otherwise result. The program has already reached 300 people in Dickinson, Johnson, and Pottawatomie counties, and 7,000 copies of the five-part publication have been distributed.

Cancer Prevention

In March 1992, the American Cancer Society (ACS), Department of Health and Environment, and Cooperative Extension cooperatively trained 150 public health nurses, dietitians, home economists, and volunteers in how to prevent and treat various cancers. ACS and Extension specialists provided educational resources, including lesson materials to be taught by volunteers. More than 10,000 leaflets, the Diet and Cancer Connection, were distributed in the first four months of the educational campaign.

Clothing for Cancer Patients

This five-year program is a cooperative effort with the Kansas division of the American Cancer Society. The program educates citizens about the need for regular examinations and encourages them to seek medical attention immediately when examination reveals a cancer symptom. Patients and caregivers are assisted in selecting post-operative apparel that is comfortable, hygienic, and inconspicuous. The instruction is pertinent to prosthesis, clothing, and head covering selection after breast surgery, abdominal surgery, and hair loss following chemotherapy.

Assisted Living

Extension agents and specialists cooperated with the Gove County Hospital to survey county residents to determine the need for an assisted living complex. Responses showed that residents were keenly interested and their primary needs included: 1) proximity to emergency services and health care, 2) nearness to friends, relatives, and church, 3) daily assistance, 4) access to a kitchenette, and 5) use of their own furniture. A majority indicated a willingness to pay in accord with present living expenses or somewhat above that rate.

Weight Control

Obesity, a prevalent malnutrition problem in Kansas, has serious physical, social, and economic consequences. Cooperative Extension has responded with three programs, New Dimensions, Noonliting, and Keeping on Track, and by training 165 health educators and home economics instructors. Weight loss for 864 class members averaged 5 to 9 pounds per participant. New Dimension participants reported improvement in an average of seven food-related behaviors.

Expanded Food and Nutrition Education Program (EFNEP)

EFNEP is an Extension nutrition education program that serves limited resource families, most with incomes below 125 percent of the Federal Poverty Guidelines. EFNEP enrolled families are taught individually or in small groups by paraprofessional instructors. A series of 10 nutrition lessons are adapted to individual and family needs. Lesson materials include the basics of good nutrition, food preparation, food buying, money management, and food safety. Participants also learn about other community food assistance programs.

More than 2,000 families and 26,000 youth participated in EFNEP in 1991. Twenty-seven percent of the EFNEP families showed a significant improvement in the quality of their diet. Participants report improvements in managing their food budgets. Youth learn the importance of diet, exercise, and good health through programs delivered at summer day camps, after-school programs, Headstart centers, and other youth programs.

YOUTH AT RISK

The risk for youth escalates with poverty, lack of family support, and negative peer pressure and is characterized by low self-esteem, a limited view of the future, and limited skills in decision making and communication. Extension's efforts center on preventive programs that strengthen family and community support systems.

4-H C.A.R.E.S. (Chemical Abuse Resistant Education Series)

4-H C.A.R.E.S. has been incorporated into monthly 4-H club meetings, focusing on 7- to 12-year-olds. More than 50 4-H clubs have tried this new approach.

Capable Kids Can

Capable Kids Can uses lesson plan that focus on strategies to reduce stress caused by the latch-key experience. Seventy-three counties have adopted this method as an avenue for participating in 4-H.

Project R.E.A.D. (Responsive Educational Approach to Diversity)

Project R.E.A.D. is targeted primarily, but not exclusively, for minority youth. Children meet twice weekly after school for activities that focus on language skills, reading, mathematics, science, and self-esteem. Volunteers provide opportunities to learn in one-on-one situations. Parents meet monthly and consider the developmental needs of their children. Career clubs, formed at middle schools, explore careers through experiential learning, field trips, and self-assessment. In Finney County, the program serves 240 elementary school youth, 80 middle school youth, and approxi-

mately 300 parents from a variety of cultural backgrounds. A goal is to decrease school drop-out rates in the state's fastest-growing community.

K.A.S. (Kids After School)

This program provides productive after-school care each school day for underprivileged and handicapped kindergarten through sixth grade youth. Program components include *creative time*, where children can make choices as they arrive and before they leave; *nutrition time*, consisting of daily snacks and discussions about nutrition; *play time*, for active games, sports, and special events; *project time*, for activities such as crafts and special projects; and *people time*, for daily discussions and activities that give children the opportunity to become aware of their values and improve their decision-making skills. A staff-child ratio of 1 to 14 is maintained to assure individual attention and proper supervision. Community volunteers provide weekly program assistance. K.A.S. sites are licensed through the Kansas Social Rehabilitation Service and have expanded to school sites with children who are at highest risk in the community.

Caring and Collaborating for Youth

Caring and Collaborating for Youth is a county-wide coalition to assist high risk families engender community understanding and support for parenting. The coalition program includes a six-week after school program; year-long support groups; an eight-week family group program; a four-day retreat; opportunities to provide cross-age assistance with programs; and a six-week summer program. It provides community training for volunteers and crisis intervention training for professionals and teachers. Fifteen agencies and organizations have joined together to help identify and address youth and family needs. In 1992 over 850 professional, youth, and families were served.

PLIGHT OF THE YOUNG CHILD

This new initiative will emphasize comprehensive, preventive educational programs for limited resource individuals and families with young children, from prenatal to age five. Nutrition, health, money management and parent education programs will help parents prepare their children for school and for a productive place in society. Extension is collaborating with community organizations and other agencies to identify and develop programs for families in need.

Nutrition

Adequate nutrition is essential if children are to be healthy and reach their potential. For example, iron deficiencies lead to anemia and lowered mental capacity; zinc deficiencies lead to smaller adult size; and the eating behaviors acquired by young children follow them the rest of their lives. If the foods children regularly eat are high in fat, sodium, and sugar, and low in fiber, vitamins, and minerals, they may develop chronic problems like heart disease, diabetes, cancer, obesity, or osteoporosis later in life.

Parents and caregivers, especially those with limited resources, need assistance in providing adequate nutrition, helping children develop positive attitudes toward eating, and avoiding eating disorders or childhood obesity. Tots at the Table is an Extension educational program which provides needed guidance targeted to parents and caregivers of preschool children.

The educational programs are supplemented with bimonthly newsletters and sets of related lessons. This provides parents and caregivers with easy-to-read nutrition and eating guidelines for preschoolers.

Parents University

This community effort provides parents with information relevant to their current needs and interests in parenting education. In 1992, the Parent's University program served 734 parents with at least 4,000 parents expected to participate in 1993. The family is the primary institution for nurturing children, caring for the elderly, and providing a healthy environment for all its members. The Extension Service meets this challenge through linkages with other agencies and organizations and by tailoring programs to the needs of the local audience.

Parent Education

Making decisions about discipline is a challenging task for parents. Social pressures like single parenting, parental employment, lack of social support from extended family, and value conflicts add to the burden of childrearing. In 1993, Cooperative Extension will use a new educational resource, *Responsive Discipline*, to help parents examine their choices in guiding children from preschool to adolescence.