FY 2002 Annual Report of Accomplishments and Results: Oklahoma Cooperative Extension Service

A. Planned Programs

CSREES Goal 1: An agricultural system that is highly competitive in the global economy.

Overview

Oklahoma key program components contributing to this goal included: improving efficiency in livestock production, improving efficiency in crop production, forage production, improving domestic marketing concepts and alternatives, animal health, commercial horticulture and alternative agriculture opportunities, biosecurity, natural resource management, small farm viability, risk management, value-added food and agriculture products, home lawn and gardening, and food safety related to production. This goal constitutes a very significant proportion of the OCES effort. Approximately 8,296 demonstrations, meetings and conferences were conducted during the year. OCES personnel in agriculture-related programs conducted an additional, 52,873 visits and consultations. These activities were attended by 359,774 participants during the year. In addition, 12.5% of these participants were identified as representing non-white, minority populations as compared to 6.6% of the state's farms operated by individuals representing these populations.

A survey of dual purpose wheat and stocker cattle producers was completed at the beginning of the reporting period. This personal interview survey was designed to learn the effect of six years of educational programming on First Hollow Stem Stage as a management criterion for grazing termination for wheat-stocker cattle systems. The survey indicated that 29% used this criterion. Since this criterion was initially developed from research at Oklahoma State, it is clear that all the impact is attributable to this educational effort. It is estimated that the annual impact of this 29% using this criterion averages $8 million to producers and increases economic activity in rural communities due to the extra grain production. This survey has fostered a new OCES focus program to improve the rate of behavior change with this practice.

Another impact study done during the year was commissioned by Value Added Products of Alva, Oklahoma. This wheat value added new generation cooperative received considerable information and assistance from Extension through the Oklahoma Food and Agricultural Products Center in planning and development of the dough manufacturing plant. The study showed that the plant in its second full year of production (despite setbacks due to 9-11-01), had an impact of more than $2.5 million in personal income to the county with 74 jobs directly and indirectly attributed to it.

Beef cattle production and management continues as one of the most significant major program areas. Cattle production comprises about 42% of the $3.6 billion in cash receipts earned by Oklahoma producers. These programs included quality marketing, reproduction, cow-calf production, quality practices, marketing tools, beef production during drought, stocker production, feeding decisions, cattle pricing, nutrition, etc. Several of these programs are

highlighted in impact statements in the "themes" section. Highlights include: the Oklahoma Quality Beef Network (OQBN) program designed to take advantage of items learned from the 1995 and 2000 Beef Quality Audits – 13,236 head of cattle from 212 cattle operations were certified in the first two years of the program. Cattle buyers paid an average of $5.50 and $5.75 more per cwt for certified cattle in the Fall 2001 and Spring 2002 sales respectively. The higher price coupled with better gain due to preconditioning resulted in a gross increase in revenue of $78 per head and a net, after all documented costs, of $17 per head. Pre OQBN survey indicated that 80% of the participants did not precondition prior to the program. Forage and hay are extremely important to the state. Quality improvement and testing programs assist producers generate high quality, safe and low cost hay. A pre-testing program for toxic nitrate levels in forage helped producers avoid a potential $3.6 million dollars of loss in one county alone last year. This program is available in most counties with similar results. Alfalfa variety trial and demonstrations and related website helped producers who followed the information net an extra $40 per acre. Finally, A hay production and testing program in Marshall and Love counties saved the average producer $1,945 in winter feed supplement costs.

In other programs, the Oklahoma Food and Agricultural Products Center continues to assist a broad array of food and related products manufacturers in the state. These vary from startup businesses to very large manufacturers. Product design, manufacturing efficiency and food safety are among the primary outreach efforts. Animal health, food safety and biosecurity have continued to grow in programming emphasis. Quick early information and education on the part of animal science and veterinary medicine extension personnel resulted in approximately 100,000 horses in the state getting timely vaccinations last year for West Nile Virus. The result was an almost zero morbidity rate in the state. Significant training and education continued through the year with respect to biosecurity for livestock operations, and a rapidly growing food microbiology – bioterrorism program developed from existing research and extension programs in the Division. Finally, an extensive small rancher program began with a high focus program n the Cherokee Prairie of north east Oklahoma.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Total expenditures represented by programming and related support for this goal are approximately $10.3 million with $1.8 million from Smith Lever funds. About 131 professional and paraprofessional FTEs contributed to the goal last year. Following are some example program impact statements arranged by CSREES Key Theme.

Impact Statement Goal 1

Key Theme: Adding Value to New and Old Agricultural Products

Title: Facility design and layout for food and agricultural product processors

Issue:
New and existing food and agricultural product processors need assistance with the design, layout and expansion of their facilities. By intelligently planning and executing growth, processors can save money and reduce waste. This translates to savings both now and in the

future. The engineering design and planning program follows a model developed by Dr. Tim Bowser, Food Process Engineer, FAPC and Biosystems and Ag Engineering. Planning sessions are followed by the creation of engineering documents such as Process Flow Diagrams (PFDs), General Arrangements (GAs), Piping and Instrumentation Diagrams (P&IDs) and Equipment lists. The challenge is to design and specify a process/facility that has low initial and ongoing capital costs, is simple and safe to operate, and expandable.

What Has Been Done:
In 2002, visits were made with the following businesses to assist them with their plant/process expansion needs. All visits included a team of professionals that could focus on the diverse issues of plant startup and expansion, including business and marketing, regulatory and sanitation issues.
Chef's Requested (Oklahoma City)
CJ Nutracon, Inc. (Guymon)
Jewel's Pies (Webbers Falls)
Ol' Santa Fe Tamale Company (Tulsa)
Skelton's Natural Beef (Texhoma)
Udder Farms (Langston)
Valley View Pecan Company (Shawnee)

Impact:

Of the businesses listed, some carried on with plans for expansion and some decided not to move forward. Of those who decided not to move forward, many reasons were cited, but the most common were timeliness, labor and capital. A decision not to expand is important, since valuable resources were not wasted. Expansions and approximate impacts are listed below:

Chef's Requested (Oklahoma City). Plans are underway for a significant process and facility expansion in the spring of 2003. A building addition will be made and a new spiral freezer installed. Production capacity will be increased by over 200%.

CJ Nutracon, Inc. (Guymon). Warehouse and packaging expansions completed. Two new employees added.

Jewel's Pies (Webbers Falls). Plans to build a new facility for pie production are underway, but a firm timetable has not been set.

Ol' Santa Fe Tamale Company (Tulsa). Currently utilizing co-packer to manufacture product. Plans to eventually construct a new facility to produce tamales for retail and wholesale distribution. Will employ 3 or more new persons.

Skelton's Natural Beef (Texhoma). A small-scale beef slaughter and processing operation has been initiated.

Udder Farms (Langston). New production process and facility for natural soap products. Plans are currently under development. Will employ approximately 2 persons.

Valley View Pecan Company (Shawnee). New pecan shelling facility was designed and constructed. Employs approximately 2 persons.

Scope of Impact: State specific; Integrated research and extension

Funding Sources: State

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Title: Value-Added Product Development from Oklahoma Grown Crops

Issue:
Relatively low market prices for agricultural commodities have forced farmers to invest in value-added industries. However, value-added activities or processing of crops grown in the State of Oklahoma have been quite small compared to neighboring states and to the nation as a whole. The majority of Oklahoma's agricultural product and food processing industries is small in size with limited technical training and resources. In order for Oklahoma based producers and entrepreneurs to be competitive in national and international markets they need technical assistance. This program addresses the needs of Oklahoma entrepreneurs and processors for technical information and training on processing, product quality, and business risk-related issues.

What Has Been Done:
Several oil/oilseed and food processing facilities in Oklahoma were visited. Oklahoma State University oil/oilseed program was introduced as a resource contact on plant based value-added products processing and quality. The program was designed to help with field questions and production problems on new products and startup small businesses. Over thirty individuals, entrepreneurs and farmers were provided with technical assistance on processing and analytical methods used for oil extraction, quality control and nutritional labeling. Extension activities have ranged from oil extraction from vernonia plants and watermelon seeds as potential alternative crops, to assisting in the processing and formulation of goat's milk laundry detergent.

Several research projects have been initiated on Oklahoma grown plant products processing and quality evaluation in an effort to promote processing activities in Oklahoma. Some of the examples to these research projects are the following. 1) Effect of conventional breeding and genetic engineering on the bioactive components of peanuts. 2) Extraction and nutritional components of Oklahoma grown wheat germ oil. 3) Processing and characterization of eastern redcedar oil. 4) Value-added food extract (watermelon juice) processing with membranes. 5) Value-added product development from Oklahoma grown peanut and pecan shells. Several oral

and poster presentations have been given on these research projects at local, national and international meetings.

A workshop on "Deep Fat Frying Technology" was planned to meet educational needs of Oklahoma based fast food outlets, restaurants and food producers. The important aspects of deep frying technique such as basics of oil chemistry, analysis methods, interactions between oils, packaging and foods, oil selection, food formulations, designing and maintaining fryers, oil filtration and treatment systems, quality control/assurance, nutrition and regulatory compliance to be covered during the workshops. A mail-in/on-line survey was conducted to determine the interest in such a workshop. As a result of a poor response to this survey we decided to offer a "Facts Sheet" publication on this subject.

Another mail-in survey was conducted to determine the present status of cedarwood oil production and marketing in Oklahoma and nationwide. Currently survey results are being evaluated.

Impact:
In less than two years, the Oklahoma State University oil/oilseed processing program has been recognized nationally and internationally as a resource in the field of oil/oilseed processing. The following projects are some of the indicators that there is a great potential for this program to develop business contacts and technology transfer with national and international producers and processors.

1) A collaborative research program has been initiated on oregano oil with CIReNa, Federal Research Center for Natural Resources, Chihuahua, Mexico. The head of the oregano research program at CIReNa is having one-year sabbatical leave at our research laboratories. Both green house tests and laboratory work are being carried out to examine the agronomic and processing aspects of oregano plant and value-added product development. There is a potential that this work will result in technology transfer to Mexico.
2) Helped an entrepreneur fine-tune their goat's milk laundry detergent formulation and production method. As a result, owners of the process moved to Oklahoma from Kansas. Currently, the product is being marketed for fund raising activities in Oklahoma and Kansas. Currently an Extension team from the Oklahoma Food and Agricultural Products Center (FAPC) is working with this company to a larger goat's milk laundry detergent production facility in Oklahoma. The owners are negotiating business agreements with countries in the Middle East for exporting this product. The FAPC is also working with the same company on lemon balm oil production.
3) Ag-Rich Foods Pty Ltd is based in Outback Northern New South Wales, Australia. They are large-scale producers of Albus Lupins, which is a grain legume rich in protein. This company has undertaken a research project to investigate the potential of developing products from Lupins for human consumption. This company is interested in working with us to develop a supercritical fluid carbon dioxide extraction process and food products from Lupins. We have received some Lupin samples from Australia and doing preliminary tests on the samples. The owner of the company plans to visit our research facilities to discuss a research and licensing agreement next summer.

Scope of Impact: State; National; International; Integrated research and extension

Funding Source: State; Contract

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Title: Basic Training: A Guide to Starting Your Own Food Business

Issue:
People looking to start up a food business have wide ranges of general business knowledge and expertise as it relates to production needs. Thus, programming needs to be flexible enough to answer specific questions/needs while ensuring overall general knowledge goals and objectives are met at the same time. This workshop provides prospective entrepreneurs with the basic knowledge needed to make informed decisions before they invest capital in a new food business.

What Has Been Done:
The Food and Agricultural Products Research and Technology Center offers a monthly workshop to food business and other value-added agricultural entrepreneurs. The program is marketed through the county offices of the Oklahoma Cooperative Extension Service (OCES), Oklahoma Career Technology Small Business Assistance Program, Chambers of Commerce, Kerr Center for Sustainable Agriculture, Rural Development Team of OCES, Oklahoma's two State Fairs, through many public speaking opportunities and by previous workshop attendees. Presenters include the Business and Economics team at FAPC and officials from the Patent and Trademark Office, the State Health Department, Oklahoma Department of Agriculture (Market Development and Division of Weights and Measures) and the Center of Home-Based Business. Industry professionals are invited as guest luncheon speakers to provide entrepreneurs insight and personal experiences.

Impact:
Over 330 entrepreneurs have taken advantage of this program since its beginning in July 1999, learning about business plan development, market evaluation, patents and trademarks, labeling and UPC code requirements, health regulations, liabilities and legalities, and the Oklahoma Department of Agriculture's "Made in Oklahoma Program." Over 20 graduates have successfully launched their value-added products in retail and foodservice markets as well as

utilize other market arenas such as fund raisers, mail order, Internet sales, gourmet and specialty stores and special events.

Scope of Impact: State Specific

Funding Sources: State, Participant Fees

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Title: Establishment of a "New Generation" Cooperative to Process Oklahoma Wheat

Issue:
Although one of the largest wheat producing states in the country, Oklahoma has a relatively small in-state industry for wheat-based foods. Wheat producers began to discuss the possibilities of collectively manufacturing products from their wheat back in the early 1990s as the concept of "new generation" cooperatives began to drift down from Northern Plains states. However, determining the feasibility and marketability of a value-added processing operation was beyond the scope of possibilities for these producers, hence the request for assistance from OCES.

What Has Been Done:
With the assistance of OCES personnel and the OSU Food & Agricultural Products Center, two wheat-based processing ventures were initialized in the state. Value Added Products (VAP), a closed cooperative based in Alva, OK, was the first to pursue the concept of a producer-owned, wheat-based food manufacturing operation. The cooperative now manufactures pre-proofed (the dough is yeast-risen at the plant) frozen dough products such as pizza crusts, croissants, pastries, and baguettes.

A second but later "new generation" cooperative, Great Plains Dough Products, began an equity drive for a par-baked (the product is shaped, yeast-risen, and partially baked at the plant) operation to be located in or near Chickasha, OK. Unfortunately, following in the footsteps of VAP and the aftermath of 9/11/01 limited the steering committee's ability to raise the capital needed to establish this venture. The cooperative was dissolved in December 2002.

Impact:
Slightly over 900 agricultural producers own the $19 million processing plant that VAP has become. In 2002, an economic impact study was performed to assess the contribution of VAP to

Woods County (i.e. the county in which the city of Alva resides). Utilizing 2001 financial and production information from VAP, and through the use of the MPLAN I/O software, these projections were made by a team of OCES economists. The results of the study indicated that VAP's contribution to the personal income generated in the county totaled (direct and indirect/induced) more than $2.5 million dollars. The number of jobs attributed to VAP was 74 (direct and indirect/induced). Additionally, VAP accounted for nearly $250,000 in business for local utilities.

Scope of Impact: State-specific.

Funding Sources: State; USDA Grant

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Key Theme – Agricultural Competitiveness

Title: Beef Quality Summit

Issue:
The beef industry has been in a transition phase the last ten years relative to livestock marketing. The packing industry has been moving toward a value-based marketing system. This has required the beef producer to become more knowledgeable of his products to hopefully increase his profit potential. As a result of this change, the beef producer has to have a better understanding of USDA beef quality and yield grades and what impacts the value of his calves he is trying to sell.

What Has Been Done:
An ongoing extension program was developed with the help and support of Oklahoma Beef Industry Council to provide a 2½ day hands-on, consumer-focused program entitled Oklahoma Beef Quality Summit. The Beef Quality Summit (BQS) was designed as a hands-on educational program that would help the beef producer, retailers, food service professional and processors to see how to improve and maintain a high standard of beef quality.

In addition, the Summit covers multiple topics including live cattle yield and quality grading, carcass evaluation and fabrication, food safety, value-added products and current trends in the beef industry. An educational notebook has been developed complete with handouts that attendees can use as a future reference.

Impact:
Since October 1999, the OSU Animal Science meats group has presented 19 Summits held at Animal Science Arena and the Food and Ag Products Center. The program has been well received by over 500 participants who have attended the Summit. Many of participants have verbally shared positive comments about what they have learned from the Summit and have implemented many of the recommended practices in their beef operations. Many of the producers are requesting more information about genetics and beef quality/yield grade material to sell their cattle on a carcass merit basis as a result of attending the Summit. Participants have enjoyed and learned a lot about beef cuts from the hands-on teaching program. The Summit has provided opportunity to incorporate information from the OK Steer Feedout and Beef Quality Assurance, which has increased the visibility of OSU Animal Science Research and Extension programs. There has been enough positive feedback that the Oklahoma Beef Industry Council has provided funds for another seven Beef Quality Summits in their 2002-2003 budget.

Funding Source(s): State; other; Smith-Lever

Scope of Impact: Multi-State Extension

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Key Theme – Agricultural Profitability

Title: First Hollow Stem Stage as the Ideal Time to Terminate Grazing of Wheat in a Wheat-Stocker Cattle Management System

Issue:
Profitability of the wheat-stocker cattle management system is highly dependent on terminating grazing of the wheat pasture at the proper time. Cattlemen frequently focus management efforts on maximizing weight gain on the cattle, allowing cattle to graze as long as possible; often long enough that grain yields are decreased. If grain yield decreases too much, net return per acre resulting from a combination of beef and grain is reduced. Research has shown that wheat yield decreases 1.25 bushels per day when wheat is grazed after the first hollow stem stage (FHS) of growth. The weight gains achieved by cattle cannot compensate for the loss in grain yield even when cattle prices remain very high and wheat prices are as low as $2.65 per bushel. The term "first hollow stem" was coined by Dr. Krenzer at Oklahoma State University to describe the critical growth stage that cattle should be removed from wheat pasture to minimize wheat yield losses. No producers had heard of the term prior to 1990 and most of the educational effort has occurred in the last eight years. The Oklahoma Cooperative Extension Service has been the

primary source of educational effort teaching producers about the use of FHS for determining when to remove cattle from wheat pasture.

What Has Been Done:
"Wheat for Pasture" fact sheets have been distributed showing the importance of FHS and how to determine it. A videotape (Growth of a Wheat Plant) was produced and made available which shows how to determine the FHS stage of growth. Additional production technology publications (PT 95-18, PT 97-5) were published that summarize the economic impact of proper grazing termination. Another production technology publication illustrated varietal differences in when wheat reaches FHS (PT 2000-14). Field tours were held at the Wheat Pasture Research Unit at Marshall to allow producers to see the impact of grazing termination on wheat production. Hundreds of wheat meetings and wheat variety field tours were held from 1993 through 2002 where grazing termination and FHS were discussed. Certified Crop Advisors training included helping each crop advisor learn how to determine the FHS.

Impact:
A random survey of dual-purpose, forage plus grain, producers in 28 of the major wheat producing counties of Oklahoma was conducted in fall of 2001. The survey was an in-person interview conducted by the County Agricultural Educator, who had been given specific guidelines on how to determine whether a producer understood FHS and how to determine when the wheat is at FHS. The survey indicated that 29% of wheat producers "determined when to terminate grazing on those fields you grazed and harvested for grain" by looking for FHS. About one in every five years, wheat develops two weeks earlier than average. In such years, studies indicate that the wheat-stocker industry obtains an additional $42,000,000 in income (combination of beef and grain) that is provided by those producers who remove cattle at FHS. Therefore, this educational effort means an average annual increase return to wheat-stocker producers of $8 million. Proper termination of grazing not only influences the wheat-stocker producers' profit, but also increases the amount of wheat coming to the elevator by 14,700,000 bushels (based on the discussed probabilities). This provides a positive influence on the economic well-being of every community with a grain elevator in its sphere of influence.

Scope of Impact: First hollow stem stage is being used in the southern Great Plains where wheat is grazed in a wheat-stocker cattle management system. This includes southeastern Colorado, southern Kansas, eastern New Mexico, and Texas. No attempt was made to evaluate the impact of FHS outside of Oklahoma.

Funding Sources: State; Smith-Lever

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Title: Marshall and Love Hay Value Program

Issue:
According to the Marshall and Love counties hay value survey, beef producers have experienced changes in attitudes toward forage management and supplemental feeding practices used in their operations that have impacted their profitability. Previously forage management practices compromised forage quality because of insufficient fertilization and inopportune harvest schedules.

What Has Been Done:
To encourage participation in learning experiences, an awards program was provided in various forage categories. An annual Hay Show was developed as an outgrowth to help maintain the interest and enthusiasm of producers. Forage testing began with representative testing of producers hay by county extension educators, summer interns and vocational agriculture teachers. Samples were analyzed by the Noble Foundation and the results were used for winter feeding recommendations made by the area Extension Livestock Specialist based on hay value software. The results were utilized through an educational program and awards ceremony. Marshall County has had hay testing for twenty-two years and Love County for ten years. Participation has grown from approximately forty producers in the 1980's to approximately 200 producers in the two counties. Forty percent of the targeted audience has been reached by this program representing 24,000 head of cattle.

Impact:
Since the initial hay quality program began in 1980, it has been documented that the average forage test has improved protein three percent. This indicates that educational factors such as proper fertilization and optimum harvest time have increased both the quality and quantity of forage produced. By utilizing nitrate fertilization properly forage production has increased one ton per acre per growing season. According to the Hay Value Survey comments made by producers indicate behavioral changes and practices adopted such as: 1. Improved a fertilization practice have improved both quantity and quality, 2. Become more aware of the importance of harvesting time on quantity and quality of forage, 3. Are group feeding cattle based on hay quality, 4. Learned the importance of protein as a supplemental feed and how to utilize it based on the forage test. In many cases producers were able to reduce the amount of protein fed because of the known content of their forage. Hay Value Survey results show that the average producer saved $1,945 in winter supplemental feed cost during the year, which stretched usable dollars by $75,840 per year for the entire group. One hundred percent of producers surveyed test their hay annually and would like to see this program continued in the future. Producers also believe they have become more efficient and effective in feeding their cattle as a result of this program. A pride of accomplishment can be seen as they receive their awards and share their experiences.

Scope of Impact: Love and Marshall Counties

Funding Sources: County; State; Smith-Lever

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Title: Packer-Feeder Simulation

Issue:
Price discovery is consistently cited as a critical issue in the beef industry. Increasing consolidation of buyers and changing pricing methods have heightened the need for producers, cattle feeders and affiliated agribusiness professionals to understand fed cattle market dynamics, the behavior of buyers and sellers, and alternative pricing methods**.**

What Has Been Done:
Four agricultural economists at Oklahoma State University developed a market simulator for fed cattle in 1990 which students quickly dubbed "the packer-feeder game". The simulator simplifies teaching and learning about the complex fed cattle market while creating a fun, game-like environment. The *Fed Cattle Market Simulator* has been used in classroom teaching for college students as well as extension education programs for ranchers and agribusiness managers. In addition, it has been used for experimental economics research. Thus, it is used in all three facets of the Land Grant University mission.

Understanding the fed cattle market requires a knowledge of several economic concepts, including price determination, price discovery, market dynamics, breakeven analysis, derived demand, production efficiency, economies of size, hedging and risk management, and industry structure-conduct performance. The OSU team combined their expertise and knowledge of the industry from previous research and experience to develop the *Fed Cattle Market Simulator*. This one-of-a-kind market simulator is for groups of 24-48 people. The team has conducted workshops with persons as young as teenagers to persons in corporate executive management positions. Participants role play as feedlot marketing managers and as meatpacker cattle buyers. Workshop participants frequently trade roles to experience both sides of the market. While four- to six-hour sessions are most common, the simulator program has accommodated a couple of hours with a high school group and up to two-day sessions at large agribusiness corporations. For all, the game simulates the daily challenges and requirements of cattle feeders and beef packers interacting with each other as they buy and sell fed cattle.

An extension fact sheet (WF-576 – *Fed Cattle Market Simulator* Applications) explains the market simulator and its role in teaching, extension, and research (http://agweb.okstate.edu/pearl/agecon/marketing/index.html). Numerous research publications are available from use of the simulator in laboratory research.

Impact:
The simulator has been the basis for an OSU course each year, about 30 students per year for 12 years. It has been the basis for marketing workshops with 90 or more groups of 25 or more participants. Producers from across Oklahoma and several neighboring states who have attended packer-feeder workshops market an estimated two million fed cattle annually. Agribusiness managers from such companies as Excel, one of the three largest meatpackers, and Continental Grain Cattle Feeding, one of the three largest cattle feeding firms, have hosted packer-feeder workshops for employee and management training. Workshops have been conducted for cattle producers and educators in several states (Oklahoma, Texas, Iowa, Kansas, Nebraska, Colorado, Utah, Michigan, Kentucky, Tennessee, and Florida). Workshops were conducted at six National Cattlemen's Beef Association conventions. Agricultural economists in other states have adopted the software for use in classroom teaching and extension education programs (Texas A&M University, Texas Christian University, Sam Houston State University, Kansas State University, Iowa State University, South Dakota State University, University of Kentucky, and Colorado State University).

Anecdotal evidence indicates the market simulator changes attitudes about how markets work and why; increases knowledge and understanding of pricing methods for various genetic types of cattle; and enhances the bargaining skills of producers. Evaluation comments indicate the market simulator aids in teaching about price discovery in a fun, game-like environment**.**

Funding Sources: CSREES-USDA Higher Education Challenge Grant; Chicago Mercantile Exchange; Hatch; Smith-Lever; State

Scope of Impact: Multi-state Integrated Research and Extension

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Key Theme – Animal Health

Title: West Nile Virus Information Team

Issue:
West Nile Virus has spread across the United States since its first detection in along the East Coast in 1999. The virus affects humans, horses, and a number of wildlife species. Conditions include flu-like responses, encephalitis and death. Projections for 2002 suggested that WNV would be detected in Oklahoma in 2002. There was a need for development of a reaction team to coordinate information distribution to state veterinarians, health department officials and

OCES professionals and to inform the general public on the disease and recommended actions for protection.

What Has Been Done:
Representatives from the State Department of Health, State Department of Agriculture, Vaccine Manufacturing Company, OSU Veterinary Medicine, OSU Animal Science, OSU Agriculture Communications and OSU Entomology met and developed a plan of information distribution for the state's general population, veterinarians and horse owners. Informational materials were developed and distributed from the various state agencies including press releases, fact sheets and web-based articles. Two different web sites were developed at OSU, one through entomology emphasizing mosquito control and one through Animal Science emphasizing control measures for horses. A series of television spots were produced through SunUp. OCES personnel received weekly updates through the system's list serve. County offices participated in several local meetings throughout Oklahoma.

Impact:
The WNV web site in Animal Science received 2000 hits through the months of April to December, 2002. An estimated 100,000 horses were vaccinated against West Nile Virus in 2002. Pharmaceutical company veterinarians commented on how well the information was distributed prior to detection of WNV in the state, and how it positively impacted protection of horses from WNV. Relationships between the various state agencies were established, and continue with periodic e-mails, information sharing and visits.

Estimates of morbidity of horses contracting WNV have been as large as 20 to 30%. Vaccination of the state's horse herd prior to detection of WNV no doubt saved hundreds of horses. Providing uniformly accepted, factual information assisted the general human population in control measures important for animal and human health.

Scope of Impact: Statewide

Funding Sources: State, Smith-Lever

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Title: Pre-Testing of Forage Sorghum Using Sulfuric Acid and .5% Diphenylamine to Determine Potential Toxicity to Cattle.

Issue:
There are over 800 cattle producers in Caddo County who raise approximately 150,000 head of cattle valued at 60 million dollars. Due to the high percentage of crop production and the short-term availability of land for grass production, forage sorghums are a primary hay source for the county. Approximately 25,000 to 35, 000 acres of forage sorghum is produced in Caddo County at two round bales per acre this results in over 50,000 round bales of forage sorghum or 45,000 tons of feed for livestock. Any type of over-fertilization with Nitrogen or any type of stress to the forage sorghum crop prior to harvest will result in nitrate toxicity and possibly death-loss or late-term abortions in pregnant cows.

What Has Been Done:
The Caddo County OSU Extension Office offers a free preliminary test for forage sorghum producers. While conducting the nitrate toxicity test, take advantage of the opportunity to educate cattlemen and women on nitrate toxicity. Such as how nitrate toxicity occurs, how can it be avoided, and what to do with toxic hay. A presentation on 'Nitrate Toxicity in Forage Sorghum' was also presented to the Oklahoma Cattlemen's Association at their Annual Meeting in July of 2002.

During the month of August 2002 during drought conditions 20 livestock producers brought in 38 hay samples to be tested. These producers represented approximately 2,000 acres of forage sorghum, or 4,000 round bales of hay. 20 Livestock producers received information on how nitrate toxicity occurs, how can it be avoided, and what to do with toxic hay. Of the 38 samples tested 18 samples (47%) tested positive for nitrate toxicity. These samples were then sent to the OSU Soil, Water, and Forage Analytical Laboratory for testing.

Impact:
Testing the hay resulted in identifying 1800 toxic round bales of forage sorghum. Approximately 9,000 cattle avoided death or late-term abortions by not feeding the toxic hay. The value to these cattle in Caddo County is approximately 3.6 million dollars of avoided agriculture economic loss which does not include the calves they produced. By educating 20 producers future potential for economic loss from dead cattle or abortions will be avoided.

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Key Theme – Animal Production Efficiency

Title: **Oklahoma Quality Beef Network**

Issue:
Cattle sickness costs the industry millions of dollars each year. These losses negatively impact producer profitability and they impact each and every level of the beef production chain. These losses are felt at the producer level through decreased performance, death loss, increased costs associated with treating sick animals, increased labor expenses and additional expenses for equipment, to name a few. These losses many times extend beyond the cow-calf producer to each of the other sectors of the beef economy. Chronically ill cattle place a huge financial burden on the entire industry as the cost of carrying such cattle replicates itself throughout the life of the calf. Unfortunately the cost burdens associated with cattle sickness do not stop once the cattle are harvested. There are a number of well-documented studies including the 1995 and 2000 Beef Quality Audits that clearly illustrate that sickness in cattle, at even an early age, can have dramatic impacts on carcass quality, tenderness, and in some extreme cases the condemnation of entire carcasses.

What Has Been Done:
The obvious answer to the problem is to manage cattle so they do not get sick to begin with. However, the real question becomes whose job is it, who benefits from it and who is going to pay for it. In order to facilitate the adoption of best management practices that should result in reduced sickness and associated adverse effects, the Oklahoma Quality Beef Network (OQBN) was developed in 2001. The objective is to add value to Oklahoma's calf crop and capture at least part of the added value. During the initial phase of the OQBN a source and process verification system has been implemented focusing on management practices around the time of weaning. In general, OQBN process verification (or certification) requires producers to wean their calves at the home ranch for a minimum of 45 days and follow specific quality assurance, vaccination and nutritional guidelines.

During the start-up phase, County Educators and Area Livestock Specialists collaborated with the Oklahoma Cattlemen's Association and producers by serving as "OQBN Representatives". In this capacity, Extension personnel provided education to the producers and inspected the cattle prior to marketing to insure that the integrity of the program was upheld. However, as the program evolves, Extension's role is gradually shifting to one of training local cattlemen, veterinarians and other industry leaders to serve as "OQBN Representatives".

Extension personnel have collaborated to collect extensive evaluation data. One evaluation data set now includes over 19,000 head of OQBN certified and non-certified cattle. These data have been used to determine the financial impact of the program. Participating cattle producers (both sellers and buyers) have received a follow-up survey. This survey provides valuable feedback for the purpose of documenting the programs impact as well as strengths and weaknesses. Five case studies were conducted to document typical program costs and changes in gross revenue. Finally, an Oklahoma Department of Agriculture grant was secured to begin the development of an information feedback system with the goal of enhancing the networking aspect of the program.

Impact:
Eight regional OQBN certified calf sales were scheduled for the fall of 2002. Seven of these sales were actually held, averaging 800 head of cattle each. During the first two years of the

program, 13,236 head of cattle have been certified, representing 212 cattle operations. Cattle buyers were willing to pay an average of $5.50 more per cwt for certified OQBN cattle during the fall of 2001 and that average premium increased to $5.75 during 2002. During 2002, the average price premium was $29 per head, while the added value of weight gain during the preconditioning period averaged $49 per head for a gross increase in revenue of $78. Documented program costs have averaged $61, resulting in an average increase in net income of $17 per head. This increase in net income does not consider the potential improvements in animal performance or carcass quality beyond the initial marketing (cow/calf) phase. According to survey data, 80% of the participating cow/calf producers had not historically preconditioned their calves. Furthermore, 97% of the 2002 participants indicated that they will participate again in 2003. One purebred producer coordinated delivery of 700 of their bull customer's calves to a central location for completion of OQBN certification process. These calves were then marketed through one of the OQBN certified calf sales. This purebred producer has approximately 2,500 cattle committed for this program in 2003. Perhaps the most significant impact the OQBN has had on the beef industry in Oklahoma to date cannot be measured by participation in the OQBN itself. According to Bill Barnhart of OKC West Livestock Market, Inc., "Since producers began to see the success of the OQBN, we have seen a dramatic increase in the number of cow/calf producers weaning and preconditioning their calves before bringing them to the livestock marketing facilities across the state. It is apparent to me that the industry is finally ready to adopt this value added opportunity".

Funding Source(s): State; Smith-Lever; Oklahoma Department of Agriculture

Scope of Impact: State Specific

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Title: Oklahoma Central Bull Test

Issue:
In the beef cattle industry, there is an increase in competition among cattle producers and with alternative protein sources to produce a higher quality product at a lower cost. In the present beef cattle industry, both commercial and purebred cattle producers are demanding documented information of cattle performance to make selection decisions in their herds. The information is used to identify animals in the cattle population with the biological types for post-weaning growth performance.

What Has Been Done:
The central bull test program was developed in 1973 to provide beef cattle breeders a source of valuable information on post-weaning growth performance. Each year producers enter their cattle on a 112-day post-weaning gain performance test. Cattle originate from Oklahoma, Missouri, Kansas, Arkansas, Colorado, and Texas. A performance test committee establishes the rules for the test and the rules comply with the Beef Improvement Federation performance guidelines. Data are collected at 56, 84, and 112 days, and a report is sent to all participants and interested groups. The report includes information on average daily gain, weight per day of age, adjusted 365 day weight, scrotal circumference, hip height, pedigrees, expected progeny differences, and ultrasound scan data. Additionally, a webpage is maintained to provide cattle producers with the latest reports and current information on performance. For cattle producers with small herds, the bull test station coordinates a fall and spring sale to assist cattle producers in marketing their animals.

Impact(s):
In 2002, 96 breed specific reports were mailed to 1,635 individuals representing cattle producers participating in the program, commercial cattle producers interested in purchasing cattle, and other parties interested in the program. There were 673 bulls (13 Breeds) on test from 156 bull consignors. For the fall and spring sales, the program assisted producers in marketing 196 bulls and 67 heifers to both commercial and purebred cattle producers in the Oklahoma region and surrounding states. All producers indicated that the testing increased the value of their bulls. For both sales, 83 cattle producers sold bulls, 120 cattle producers purchased bulls and heifers, and the gross revenue was $441,670. For the years 1973 to 2002, 18,712 bulls have been tested through the program.

Scope of Impact: Multi-state

Funding Sources: Private, State

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Title: EPD's Tools for The Future

Issue:
Cow-calf numbers have increased in Kiowa County over the past 7 years, from 23,000 in 1995 to more than 26,000 in 2002. Along with this increase has been the issue of producing for market demands. The day of hauling calves to town and getting top dollar for them because they *appear* they will grow may be over. Production of high quality, genetically sound cattle will be more

important tomorrow than today. Producers must know how to take advantage of every tool they can to produce what the market demands. Knowing how to use these tools may be the difference in making a profit or not. Producers that are willing to step forward and learn to use the information provided to them through the use of Expected Progeny Difference [EPD's] will have an advantage. The use of EPD's will allow producers to make educated predictions on a number of items that can affect their production and also their profitability. From selecting light birth weight bulls to use in heifer breeding programs, to the selection of bulls with maternal or carcass traits depending on the direction of their program. This increase in profitability will also have a positive effect on the communities where they reside.

What Has Been Done:
Best management practices indicate that producers in the county ought to use animals based on EPD's to increase the quality of their production. However, a survey showed that only 25% of Kiowa County Cattlemen's Association (KCCA) members understood Expected Progeny Difference or how to use it to make management decisions. The education process began with a series of educational meetings during Kiowa County Cattlemen's Association [KCCA] meetings, explaining how EPD's work and the value of this information. The Oklahoma Quality Beef Network [OQBN] program and the Oklahoma Beef Quality program were used to relate the importance of quality in the market place. A collaborative effort from Area and State personnel strengthened this information and made it more creditable to the 120 producers that attended these meetings. The KCCA also sponsored a Beef Expo that allowed approximately 250 youth and adults to learn how to use EPD's. During the Expo youth, as well as, adults had the opportunity to actually use information provided by EPD's in several situations during a judging contest. They were asked to select animals based on the use of the EPD information, as well as, visual appraisal.

Impact[s]:
Through the efforts of the Extension programming approximately 350 youth and adult producers have been reached through these activities and the addition of an Agriculture Newsletter for County producers. With information provide by visiting KCCA members approximately 10% of the membership has purchased breeding animals with EPD's and their response has been positive. Based on one producer's efforts, live calf crop [first calf heifers] increased from 96% to 100% due to use of bulls with proven EPD's for light birth weights. Increasing the production by 4% in Kiowa County could mean an increase in net income to county producers of approximately $50,000 per year (based on a typical replacement rate of 10%). Other producers have started using bulls with increased EPD's for weaning and yearling weights, although these figures have not been provided at this time, we are expecting to see an increase in pounds produced which converts to increased incomes for county producers. We will continue evaluating the programs by using information provided on actual carcass value by the Oklahoma Steer Feed out program, which one of the producers participated.

Funding Sources: State, Smith-Lever; Other

Scope of Impact: Kiowa County

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Key Theme – Diversified Alternative Agriculture

Title: Extension Educational Programs for the Oklahoma Wine Grape Industry

Issue:
The Oklahoma grape industry has experienced a resurgence of interest and enthusiasm during the last three years. Interest has come from wineries, grape growers, and others, e.g. chambers of commerce, interested in economic development. Much of the total economic development potential comes from tourism and spin off sales associated with the wineries which tend to be located in smaller communities. Total wine sales in OK are near 2 million gallons per year. Potential exists for Oklahoma vineyards and wineries to increase market share by producing grapes, making and selling wines locally. The industry enjoys popular support from the legislature and the general population as an initiative in 2000 which revised state laws to put OK wineries in a better competitive position received over 70% approval from the people.

What Has Been Done:
In 2000 a team of Extension specialists was assembled to develop an educational program for Oklahoma grape producers. The core team consisted of specialists from Horticulture, Entomology and Plant Pathology. Key support has also been provided by specialists in soils, irrigation and agriculture economics who have assisted with instruction and contributed to development of educational materials.

As a result of this team effort the Oklahoma Grape Management Course has been designed and offered twice. The course meets six times per year for a period of four hours. Area meetings for grape growers and county educators were held in southwest and northwest Oklahoma. Grape related articles have been added to ongoing newsletters related to fruit production, an Oklahoma Vineyard Management Guide has been drafted and is nearing final form and tentative budgets have been prepared to assist potential grape growers with decision making.

Demonstration/research projects have been initiated to secure reliable data on grape variety adaptability and pest management requirements in the various regions of Oklahoma. Competitive grant proposals have been successfully submitted to various funding agencies including Integrated Pest Management (Oklahoma minigrant program) and private foundations (Kerr Center for Sustainable Agriculture) to procure funds

Impact:
In the last three years OK grape acreage has increased from about 50 to over 220 and the number of licensed wineries has increased from about 4 to 16. Nearly 150 people, including 13 county extension educators, have taken the Oklahoma Grape Management Course its first two years. Over 70 persons are currently registered for the 2003 course. As a result of this educational program potential grape growers from more than 45 counties have learned about the economic potential of wine grapes, how to reduce environmental risk through proper variety selection, how to accurately scout for insects and diseases and how to install and manage a vineyard. Initial data have been collected from demonstration plantings on grape variety adaptability as well as insect and disease incidence at four locations in OK and results disseminated to growers.

Scope of Impact: State Specific; Integrated Research and Extension

Funding Sources: State; NGO; Smith-Lever

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Key Theme – Home Lawn and Gardening

Title: The Oklahoma Master Gardener Volunteer Program

Issue:
Rapid urban growth in many areas of the United States coupled with increased interest in the environment and home gardening have prompted an ever-increasing number of garden and landscape inquiries. Along with this interest, comes a multitude of gardening questions needing individual explanation and too few Extension staff members to answer each question. Many of these questions are seasonal in nature and are relatively easy to answer assuming that one has horticulture training. In Oklahoma, only few of the Extension educators have formal training in horticulture.

What Has Been Done:
Oklahoma Master Gardeners are trained, supervised and recruited to: 1) improve overall efficiency in providing one-on-one service to the non-commercial horticulture clientele in the county, 2) provide group learning and teaching activities for non-commercial clientele, 3) allow agents to develop proactive Extension programs, and 4) form a group of Extension volunteers to support additional consumer horticulture efforts.

Trainees participate in a 10 - 13 week course receiving between 40 - 56 hours of course work on subjects including: basic plant science, vegetables, fruits, nuts, ornamentals, lawns, diagnosing pest problems, soils, and other related topics. Instructors for the training sessions are State,

District, and County Extension personnel and specialists. Upon completion of the training period, satisfactorily passing an exam on materials and topics covered, and donating between 40 - 56 hours of volunteer time to the Horticulture program, the trainees are certified and awarded the title of Oklahoma Master Gardener. Those Master Gardeners who wish to continue in the program from year to year after the initial training and volunteer hours have been achieved are expected to pursue a minimum of 20 hours of continuing education and give 20 hours of volunteer service each year to remain active in the Master Gardener program.

Examples of Master Gardener Volunteer activities include: staffing plant clinics to answer phone and walk-in questions, manning educational exhibits, maintaining demonstration gardens, community beautification projects, serving as 4-H horticulture leaders and judges, speaking at club/civic meetings, teaching horticulture activities at nursing homes, etc., assisting in horticulture mailings, newsletters, etc., and appearing on TV and radio.

Impact:
The service from the Master Gardener volunteer program has proven to be a highly popular means of extending the knowledge of the Oklahoma State University Cooperative Extension Service to the residents of Oklahoma. Through the innovative program, Extension has reached out to more people and groups. At the same time, the program has significantly affected professional staff's use of time. Survey responses from twelve of the participating counties show an average of 20% of the agents time is spent coordinating the program. However, the experience of the established county programs indicates that the program eventually frees the agent's time for other program opportunities. The Oklahoma Master Gardener program has begun to demonstrate clearly that volunteers can serve as excellent educators at the local level in consumer horticulture.

The Oklahoma Master Gardener Program continues to grow across the state with as many as 32 counties participating in the program as of January 2003. Approximately 284 new Master Gardeners were trained during the 2000-2001 training season. Close to 1249 active Master Gardeners volunteered their time. The most current report of Master Gardener activities shows that (13 out of a possible 19 counties reported) approximately 23,595 hours of volunteer service were contributed between October 2000 and the end of September 2001. Over 84,587 Oklahomans were contacted with as many as 541+ educational and community programs and activities being conducted in their communities. This translates to over $378,000 in service that was donated by volunteers during 2001 (wage rate of $16.05/hour was used, which includes a 12% estimate of fringe benefits. This hourly rate is the assigned wage for nonagricultural workers in 2000 as published in the *Economic Report of the President* [2001 edition]. The Independent Sector, an organization that "serves as a national forum to encourage giving, volunteering and not-for-profit initiative," supplied this information).

Scope of Impact: State Specific; however, continued training opportunities may be multi-state, regional or national.

Funding Sources: State; County; Fees; Smith-Lever

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Key Theme – Managing Change in Agriculture

Title: Time for a Change on the Family Farm: Retiring? Scaling back? Shifting Control or Transferring Assets?

Issue:
Oklahoma farm and ranch families accumulate wealth through ownership of land, machinery, equipment, and livestock. When it becomes time to retire, the operator and the family must determine what to do with the assets. Assets can be passed on to heirs or sold. This decision is often complicated by the need for income during retirement, estate tax issues, and the desire to treat heirs equitably. Families often lack complete information in some areas and need direction in planning for change.

What Has Been Done:
An advisory council of State and Area Specialists from Agricultural Economics and Family and Consumer Sciences, and Extension Educators-Agriculture and Family Consumer Sciences was formed in August 1998. An in-service training was held for Extension staff in November 1999. Twenty-four Extension Educators, State and Area Extension Specialists, and the Intensive Financial Management and Planning Support (IFMAPS) staff attended. Participants suggested some minor modifications in program content, additional materials needed, and packaging for presentation to Oklahoma farm families.

The program objectives are to provide a general knowledge of topics including goal setting, estate planning, retirement planning, off-farm investing, transitioning assets and control, and communicating with family, and encourage participants to seek additional information. Families are given information about options for asset transfers, shift of management, compensation agreements, and types of business organizations for farm families. The audience is given a general view of each topic, so they are aware of the components they need to consider. Participant interest in specific topics will lead to additional programs that address the requests.

Public programs were held in Kingfisher/Logan counties in Fall 2000, Grady/Canadian counties in Fall 2001, Kay county in February 2002, and Texas county December 2002. A program is currently ongoing in Garfield county January and February 2003. A program is planned for Woods County in April 2003.

Impacts:
This program has reached 37 farm families (approximately 73 people). Participants have increased their knowledge about all of the topics. Several families are evaluating their financial

and retirement goals and needs. An increased awareness and better understanding of legal and tax issues will help families minimize the tax burden while accomplishing family goals. Families also acquire information about estate planning and can evaluate transfer options that are tailored to their operation and situation. They are better prepared to meet with a lawyer and accountant, which could reduce the amount of time and money spent for legal and accounting services.

Two follow-up educational programs have been held in Kingfisher and Logan counties to further address issues of estate planning and property ownership. Other families have individually received information about ownership alternatives and transfers, and estate and trust issues. One former participant stated (after the death of a spouse) that the transition was traumatic, but much smoother than it could have been because they had attended the Time for a Change program.

Scope of Impact: State Specific;

Funding Sources: State; Smith-Lever

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Key Theme – Plant Production Efficiency

Title: Testing Alfalfa Varieties

Issue:
Tens of thousands of individuals are directly involved in alfalfa production in Oklahoma, and it is a mainstay of the livestock industry. Much alfalfa is used on the farm where it was produced; however, approximately 30 to 50% of the hay from this crop may be exported to surrounding states. Alfalfa is second only to wheat as the most widespread crop in Oklahoma (340,000 acres harvested), and it is second only to peanuts in income per acre among agronomic crops. It is a relatively expensive crop to produce, and the choice of variety to use has a direct impact on cost of establishing a stand and potential profits. Testing alfalfa varieties as they are developed helps producers make the choice of which variety to purchase, guides seed marketers as to which varieties to offer, and helps industry breeding programs orient their objectives toward the development of good varieties for our state.

What Has Been Done:
As part of the alfalfa breeding program, an extensive variety testing program is conducted throughout the state since 1977. Each year new alfalfa variety tests are established in the state to represent the diverse production areas, yields are measured at each harvest, and results are

published. All producers, extension personnel, seedsmen, industry representatives, and seed dealers have ready access to the findings of this activity, and many use the information frequently. This activity is responsible for the high level of acceptance of improved alfalfa varieties. Test results are published annually in Extension publications and on the Internet at alfalfa.okstate.edu/alfalfa/var-test/alf-var.html, part of the "Oklahoma Alfalfa' web site. The best varieties for Oklahoma in these tests are promoted in articles in the Oklahoma Alfalfa Hay & Seed Association NEWS and in oral presentations organized by County Extension Educators. Dozens of alfalfa varieties are released annually, and many of these could be grown in Oklahoma.

Impact:
As a result of this program, most of the alfalfa planted in the state and region are varieties that performed well in this testing program. Results of this program have reduced the use of alfalfa seed of unknown origin and/or quality. The first step in shopping for new alfalfa varieties for most progressive producers is to consult the most recent findings of this program. Varieties that perform the best in this test yield about 10 to 20% more than mediocre varieties and tend to remain productive two to five years longer. Improved varieties have led to increased yield per acre and relatively stable total production in spite of decreasing acres of alfalfa in Oklahoma. Growing improved alfalfa varieties increases the cost of establishing a new stand from $10 to $15 per acre; however, earnings are increased about $30 to $50 per acre because of increased yields. Based on 340,000 acres harvested in Oklahoma last year, this could mean about ten million dollars to producers and their communities in a typical year.

Scope of Impact: State specific and multi-state (Texas, Arkansas, Colorado, and Kansas)

Funding Sources: State; Smith-Lever

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Title: Clearfield™ Technology helps Wheat Producers Control Problem Weeds.

Issue:
Annual grass weeds in Oklahoma winter wheat costs the industry millions of dollars each year. These weed infestations negatively impact producer profitability and marketers and end users of the grain. Among the losses incurred by the producer include reduced grain yield from weed interference with the crop, the cost of chemical control if herbicide options are available, and reduced grain quality due to increased dockage and moisture content caused by the weed seed in the harvested grain. The next levels of the grain industry must contend with the later loss and pass the financial burden eventually to the consumer. Successful cheat and wild oat herbicides

have been developed and are currently helping producers combat these once tough weeds. However, the removal of cheat from fields is resulting in the invasion by other tougher to control grasses such as feral rye, jointed goatgrass, rescuegrass, downy brome, Japanese brome, and Italian ryegrass. For these individual weeds or mixed populations of these weeds (which is becoming more common in Oklahoma), control options are limited.

What Has Been Done:
Weed control options for annual grasses in wheat have been evaluated for several decades. These researched options have included tillage systems, chemical control options, cultural control practices, and combinations of these ideas. To this end, successful weed management systems have been developed for cheat and wild oat. Until recently, selective control practices for the other grass weeds were few or nonexistent to Oklahoma wheat producers. Clearfield™ wheat technology developed and marketed by BASF Corporation will selectively control monocultures or mixed infestations of these weeds in wheat. To illustrate the potential benefits of this technology to Oklahoma producers, weed control demonstration plots (8 locations), field days (10 field days), and county/area meetings (25 meetings) were held in conjunction with county and area extension personnel across Oklahoma during 2001 and 2002. Over 200 Oklahoma wheat producers or associated wheat industry personnel were contacted. Extension activities were supported by BASF, AgriPro Seeds, & Oklahoma Wheat Commission.

Impact:
An estimated 6,000 acres of Clearfield™ wheat is currently being produced in Oklahoma. The bulk of this acreage is located in far western Oklahoma on land infested with feral rye and/or jointed goatgrass. This will be the first year the producers of those acres will have a selective control option for those weeds. Dockage alone due to these weeds is anticipated to decrease from 10 to 20% down to 0 to 2% during the first year of its use. This does not include the improvement in test weight due fewer weed seeds in the marketed grain. Therefore, impacting the quality (reduced dockage and increased test weight) of the harvested grain alone, should translate into a savings of $0.50 to $1.00 per bushel of wheat. At a statewide average of 34 bushels to the acre, that amounts to $17 to $34 per acre. Production acres of Clearfield™ wheat is anticipated to increase drastically in the coming years when (1) Clearfield™ seed availability increases and (2) as Clearfield™ wheat varieties more suited for Oklahoma become available.

Funding Source(s): State; Smith-Lever; Oklahoma Wheat Commission, Other

Scope of Impact: State Specific

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Key Theme: Risk Management

Title: Prioritizing Risk Management Decisions

Issue:
Agricultural producers must sell what they produce and many producers believed that they were not receiving "top dollar" for their production, that they were not adequately managing marketing risk. Producers manage production, marketing, financial, legal and labor risk. Research that compared net returns from managing production versus marketing risk indicated that managing production risk was more important than managing price risk. In the order of significance was production costs, use of technology and then yields. This implies that most producers should adopt simple marketing strategies that tend to work over time and concentrate on managing production risk.

What Has Been Done:
This program has been delivered nationally, regionally and statewide through meetings and mass media outlets. Presentations have been made at the National Association of Wheat Growers Annual Convention, Oklahoma Farm Bureau Annual Convention, county Extension meetings, published in Southwest Farm Press (48,000 circulation in New Mexico, Oklahoma and Texas), and the Oklahoma Farmer Stockman (11,000 circulation), broadcast by OETA TV "Monday Morning Market Monitor," KTOK radio—Oklahoma City, AgriNet radio network in Oklahoma, and KGNC—Amarillo, Texas. Producers were taught that one of their scarce resources, time, should be concentrated in areas that produce the highest return.

Contact with producers indicated that they wanted proof that they were doing a relatively good job of managing price risk. Research was conducted to estimate Oklahoma wheat producers' marketing efficiency. Three local Oklahoma elevators provided data for over 28,000 purchases of farmer's wheat for a nine-year period. The data indicated that about 50% of Oklahoma's producers sold in the top one-third of the market. Only 24% of Oklahoma's producers sold wheat in the bottom one-third of the market. Armed with these results, many producers were persuaded that managing production risk was more important than managing marketing risk.

Impact:
Recent research shows that in the southern part of Oklahoma where producers harvest early in the harvest season, wheat producers tend to sell wheat as it is delivered to the elevator at harvest. As the harvest moves into northern Oklahoma, the producers tend to store wheat for sale in the fall and winter. These strategies are consistent economic market location theory and have been taught in this program. Producers still demand market situation and outlook information and research results that indicate which marketing strategy tends to produce the highest net price over time. As expected, demands for marketing workshops that teach producers how to use marketing tools have declined.

Scope of Impact: Multi-State; Oklahoma, New Mexico, Texas, and western Kansas

Funding Sources: State; Smith-Lever

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Title: Biosecurity for Oklahoma Beef Cattle Operations

Issue:
The outbreaks of "foot-and-mouth disease" and bovine spongiform encephalopathy (BSE; often called "mad cow disease") in Europe followed by terrorist attacks of September 11, 2001 and anthrax scares in the United States have caused increased concern about the accidental or intentional introduction of infectious diseases in cattle operations. In addition, there are currently several other cattle disease entities already present in the United States that can best be avoided by increased biosecurity measures.

What Has Been Done:
In late 2001 and through the first half of 2002, training sessions were conducted for cattlemen and OSU Extension personnel including in-service training and the cattleman's college of the Oklahoma Cattlemen's Association. One thousand producers and all extension agriculture personnel have been instructed about improved biosecurity of their cattle operations. In addition, an OSU Fact Sheet about "Biosecurity in the Beef Cattle Operation" was written and distributed and is available on the OCES and Animal Science websites.

Impact(s):
The monetary impact of an extension program that deals with preventative measures such as biosecurity is impossible to estimate. From audience polling, it is apparent that a large majority of Oklahoma producers are unaware of the dangers of one of the disease entities (Johne's Disease) that already is present in Midwest cattle operations. Only 15% of producers indicated previous knowledge of the disease. Now many more of Oklahoma's cow calf producers are aware of Johne's disease and the need for increased biosecurity to maintain Johne's-free herds. Furthermore, these producers now are aware of their role in keeping BSE and Foot-and-Mouth disease out of the United States. They have been taught the symptoms of these diseases, the need for an immediate response if these diseases ever enter U.S. cattle herds, and the proper authorities to notify if suspicious disease symptoms are found. Extension County Agricultural Educators now have a procedure to follow should there be a suspected incident.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Key Theme – Small Farm Viability

Title: Cherokee Prairie Small Rancher Initiative

Issue:
There are over 1,245 part time producers with less than 50 acres in five counties in N.E. Oklahoma (Rogers, Craig, Ottawa, Mayes and Delaware). Due to the part time nature of their farming operation a good source of timely, direct and clear information was hard to access. The personnel resources of money, land and labor committed to these part time farms represent a significant economic resource to N.E. Oklahoma. One common factor these part time farms have is soil type, climate and vegetative type known as the Cherokee Prairie Resource (CP).

What Has Been Done:
A committee of county educators and specialist developed a plan to reach small part-time producers. Monthly newsletter was the main instrument to reach the part time producers. In addition to newsletters, a web site, sale barn inserts, demonstration plots, news articles and a ranchers' conference were used to deliver information in a timely, precise manner. Newsletter topics were selected and assigned to the appropriate authors along with target dates during the initial CP planning sessions. Articles were written to appeal to the smaller operators with less livestock experience than traditional clientele. A conference was planned to present information to questions that arise at local feed stores and sale barns.

A mailing list of 1,540 potential clientele was developed. This was done from farm tax exemption roles and soil test done for small producers. Two Cherokee Prairie Conferences for small ranchers had to be held to accommodate all the producers. Two hundred eighty producers attended the two "Ranchers Night Out" conferences.

Impact:
In the first nine months of CP operation, 13,860 newsletters where sent, two conferences held, four demonstration plots set out and countless newspaper articles done. The Cherokee Prairie Small Ranchers Initiative introduces part-time producers to a source of information that is timely, practical, direct and unbiased. Of the ranchers surveyed, 92% said they would attend the next Cherokee Prairie activity. The survey also showed 70% of the small ranchers agreed the topics covered in the Cherokee Prairie Newsletter applied to producers' situations. Two important behavioral changes were indicated from a early survey of the small ranchers receiving information. These are: 1) most indicated the intent to do more soil tests and 2) had already begun to increase their contact with county Extension offices for production information.

Scope of Impact: N.E. Oklahoma, State Specific

Funding Sources: State; County; Grand Gateway Economic Development Agency; Smith-Lever

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CSREES Goal 2: A safe and secure food and fiber system.

Overview

Oklahoma key program components contributing to this goal include: food safety, food preparations, food preservation, HACCP Training, and microbiological testing. During the year, 320 demonstrations, meetings and conferences were conducted under this goal. Over 6,184 participants attended these activities during the year. OCES personnel conducted an additional, 2,132 visits and consultations with these audiences.

Educational and service programming under this goal really fall into commercial categories and home/general public categories. Educational programs with commercial food processing, preparation, and retail sales make up much of our effort. The Oklahoma Food and Agricultural Product Center is a completely state-funded entity that is wholly integrated into the OCES mission in Oklahoma. The Center has conducted numerous HACCP training sessions for food processors in the state. This has resulted in many of these processors ability to develop and maintain acceptable HACCP plans to help them stay in business. The center is working closely with state and federal authorities working on microorganism food security problems. The Center also conducts training sessions for food related entrepreneurs trying to get into business or expand their businesses. Food safety laws and regulations are an important part of this training. The Center also provides educational programs such as the "Master Canners Workshop". This program provides basic training in producing acidified and acid canned foods. Several of those attending these workshops have returned to the Center for additional business and processing assistance. Food service industry personnel in Tulsa have available to them a 12-hour food handlers' course. Local food codes require taking such a course and passing of a test. The OCES course is the only one with materials, classes, and testing also available in Spanish. We have extended the initial work with extension educators training on biotechnology and bio-terrorism in relation to food safety. Food handling in the home is also an important part of the FoodSafe program and numerous nutrition-based cooking schools. The OCES conducts numerous nutritional programs. Most of these programs include food safety in selection and

preparation of foods in the home. These nutrition programs are reported under CSREES goal 3. The OCES provides much training in the use and proper application of pesticides in food production. Again, most of these efforts are reported under CSREES goal 4. Finally, HAACP and livestock meat quality programs often get reported under CSREES goal 1.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Total expenditures represented by programming and related support for this goal are approximately $430 thousand with $75 thousand from Smith Lever funds. About 5 professional and paraprofessional FTEs contributed to the goal last year. As noted above, due to the categorization of Key Themes by CSREES, closey related efforts in food safety also show up under goals 1, 3, and 4. Following are some example program impact statements arranged by CSREES Key Theme.

Impact Statements Goal 2

Key Theme: Food Safety

Title: Oklahoma FoodSafe Program

Issue:
The Centers for Disease Control estimates 76 million Americans get sick, 300,000 are hospitalized and 5,000 die each year from foodborne illness. Two to three percent of cases lead to secondary long-term illnesses such as reactive arthritis, kidney failure, or meningitis. Costs for lost productivity and health care are estimated at up to $9.4 billion annually. Keeping food safe from farm to table requires a continuous chain of responsibility for the safety of the food. If that chain is broken at any point, foodborne illness can result. Today because of lack of knowledge and/or failure to practice safe handling procedures or to make safe food choices and decisions, the weak link in the chain is often the consumer.

What Has Been Done:
The Oklahoma FoodSafe Program works primarily with consumers to increase the safety of the food supply in our state. By increasing their awareness and knowledge of safe food behavior and choices and by teaching them to take responsibility for the safety of their food they can reduce their risk of foodborne illness. The program has offered food safety education in a variety of projects including the Oklahoma Healthy Living and Healthy Living A-Z Programs for adults and children, leader training for Family and Community Educators, a food safety campaign for the elderly called “Food Safety for Seniors,” and the Oklahoma Gardening public television program.

Impact:
Statistically significant improvements in safe food handling practices observed among the 386 youth and 715 adult Oklahomans who participated in the "Healthy Living A-Z" Impact Program included:

- Increased hand washing
- Increased washing of fresh fruits and vegetables

- Increased use of separate cutting boards for fruits and vegetables to avoid cross contamination

Youth that participated in the "Healthy Living Program" were exposed to the primary food safety message that encouraged children to always check for a brown color throughout their hamburgers before taking a bite. Of the 63 children who completed the program forty-three percent increased their score when asked if they checked to see if their hamburger was brown all the way through before eating.

Twenty-two county educators were trained on the "Food Safety for Seniors" curriculum. A summary of results of the 206 evaluations returned by seniors that attended lessons showed:

- Most participants (56.0% of 50) of "Thawing Meat Safely" believed they thawed meat safely prior to the lesson. Of those that did not (44.0%), 40.9% indicated they definitely planned to change to a safer method of thawing.
- Most participants (75.2% of 105) of "Storing Leftovers" believed they handled leftovers safely prior to the lesson. Of those that did not, 53.9% definitely planned to change the way they handled leftovers to reduce their risk of foodborne illness; 26.9% probably would change; 15.4% would think about changing their handling of leftovers; and 3.9% planned no changes.
- More than half (57.8% of 45) of participants of "Cooling Hot Foods" found the need to change the way they cool food to reduce the risk of foodborne illness. Of those, 61.5% definitely planned to change the way they cool food after attending the lesson; 26.9% indicated they probably would change; and 11.5% would think about making a change.

Other educational projects have targeted raising awareness of food safety and increasing a sense of personal responsibility for the safety of food selected and eaten. Substantial numbers of Oklahomans have been reached through such projects as:

- In-service training and teaching materials provided to county educators in 2002 on basic food safety issues and practices, food safety issues associated with sweeteners, and home food preservation.
- Food safety training was provided to EFNEP educators and NEA's in 2002 at joint workshop sponsored by the Oklahoma Cooperative Extension Service, Langston University and FDA-Dallas.
- The "Oklahoma Gardening" public television kitchen segments on safe food preservation and preparation reach 175,000 viewers for each of its 20 to 30 annual appearances.

These programs all represent potential reductions in foodborne illness risk for Oklahomans. For each case of foodborne illness that does not occur, Oklahoma saves money in medical costs and avoids productivity losses.

Funding Sources: Smith-Lever; State

Scope of Impact: State specific

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Title: Quick & Easy Cooking Schools

Issue:
Thirty-six counties in Oklahoma (2000) were above the state average for reported food-borne illnesses. (Food-borne is laboratory confirmed cases of Campylobacter, E.coli ol57:h7, and Salmonella.) The reported cases in Washita County were 159% higher than the state rate and 219% higher than the U.S. rate. Custer County's incidents were 20% higher than the state rate and 49% higher than the U.S. rate.

What Has Been Done:
The *Quick & Easy Cooking Schools* were piloted in two counties in 2000. From those cooking schools, it was learned that many people have poor food safety practices. Other challenges for participants included not knowing how to read recipes, measure ingredients or follow instructions. Therefore, very basic information was taught before moving to more in-depth material. Thirty cooking schools have been taught by other extension educators throughout the state in 2001and 2002 using the 70 page *Quick & Easy Cooking School* curriculum Sawatzky and Spalding developed.

Impact:
The Food-borne illness rate the following year after the pilot cooking school dropped dramatically for Washita County going from 159% higher than the state rate to 100% lower than state rate (reported cases dropped to zero). In addition, Custer County food-borne illness rate dropped tremendously going from 20% higher than the state rate to 21% lower than state rate. Results from participants' pretest and posttest indicate the following: When using a meat thermometer, the percentage that "never used a thermometer" when cooking before the cooking school, was cut in half. The percentage that "often used thermometer" before cooking school, tripled after participating. The percentage that used a thermometer "most of the time", doubled after participating. When addressing the internal temperature of pork, the percentage that chose the correct end point temperature doubled. Others indicated a temperature that would ensure safe pork but with drier meat. Moreover, the following are samples of additional food safety comments from participants regarding what they learned: "Wash meat thermometer in-between insertions. Do not just rinse the grilling tray that held raw meat, but wash it before putting cooked meat back on it. Do not thaw meat on the counter."

Funding Sources: Grant; State; County; Smith-Lever

Scope of Impact: State Specific

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Key Theme – Food Recovery/Gleaning

Title: **Pushmataha County "Feeding the Hungry" Grant Program**

Issue:
Pushmataha County is one of the poorest counties in Oklahoma. The average per capita income is only slightly above $15,000. There are almost 500 individuals in the county who are classified as disabled or who are receiving Old Age Assistance and who are living on less than $600 per month. These individuals receive an average of $10-$39 per month in Food Stamps and are often forced to choose between food and medication. In recent months, the economy in this area has declined even more, thus increasing the need for some type of assistance for those individuals and others who are living on marginal incomes.

What Has Been Done:
The 4-H teen leaders in Pushmataha County responded to the issue of hunger and poverty in their communities by working with their Extension Educator and other community partners to apply for and receive a $1,450 Kraft "Feed the Hungry" grant through the National 4-H Council. Their goal was to offer a combination of non-perishable food items, nutrition education, and possibly fresh produce to the elderly/disabled throughout the county. The plan involved identification of eligible individuals, developing a relationship with a local food bank that allowed the team to acquire the food for literally "pennies per pound", and distribution of the food countywide. Recipients also received access to nutrition education through the Oklahoma Cooperative Extension ONE Program. This grant purchased over 50,000 pounds of non-perishable food items, plus enough turkey and most of the trimmings to feed 175 people at a community wide Thanksgiving dinner. Over 2,000 individuals in Pushmataha County received assistance through this project and almost 100 youth, community leaders, and volunteered their time and equipment to make this project a success.

Impact:
- 1550 (non 4-H) adults reached with food, nutrition education
- 500 (non 4-H) youth reached with food, nutrition education
- 35 4-H youth committed to a service learning project
- 50 community leaders and volunteers involved in delivery

Funding Source: Grant; State; Smith-Lever

Scope of Impact: State Specific

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CSREES Goal 3: A healthy, well-nourished population

Overview

Oklahoma key program components contributing to this goal include: nutrition, health and wellness, and community nutrition education programs. The OCES 5-year plan of work includes key program components under other goals (particularly goal 5) that CSREES chose to include as themes under this goal (goal 3), such as, health care-community health care. Thus some reporting discontinuities may exist between what is reported in the overview and under key themes. During the year, 3,330 demonstrations, meetings and conferences were conducted under this goal. OCES personnel conducted an additional, 9,082 visits and consultations. All these activities resulted in reaching more than 105,942 participants during the year. Approximately 26.9% of the participants were non-white audiences compared to 25% in the general population of Oklahoma. The primary non-white audiences were female/Native American and female/Black – constituting approximately 9% and 7% respectively of those reached.

The OCES community nutrition education programs (CNEP) reach a large and diverse audience across the state. These programs include: EFNEP Families/Nutrition Education, EFNEP 4-H Youth/Nutrition Education, EFNEP Interagency Cooperation, and the ONE Program. For example, in addition to a large number of group educational meetings, professional and paraprofessionals conducted over 4,385 visits and consultations with clients concerning nutrition. These programs address the full spectrum of nutrition education and information, including: food choices, selection, preparation, healthy diets, prenatal, child and adult nutrition, nutrition related illnesses, food safety, food costs, community gleaning, community nutrition, etc. A research study conducted during 2000 found that Oklahoma realizes a 36% gain on their investment in CNEP. The gains primarily come from decreases in nutrition-related illnesses resulting in lower medical costs and an increase in worker productivity (fewer sick days). Family Consumer Scientists also have program targeting other groups like the Medicare Touch and Dining with Diabetes programs designed to assist particular high-risk groups with issues. A program area of rapidly growing emphasis for OCES has been rural health care. Medical facilities and services are vital to the quality of life of rural residents and the survivability of rural communities. OCES rural and community development professionals working with county extension educators, community leaders, community groups, and other agencies have community health planning sessions around the state. These programs are closely related to the community health services

and infrastructure programs discussed under goal 5. Together they are helping many rural hospitals find a means to remain open and to contribute to the health and economy of these communities.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Several of these programs (particularly those mentioned above) have grown over the past few years. Total expenditures represented by programming and related support for this goal are approximately $5.3 million with $1.6 million from Smith Lever funds. About 90 professional and paraprofessional FTEs contributed to the goal last year. Following are some example program impact statements arranged by CSREES Key Theme.

Impact Statements Goal 3

Goal 3 – Key Themes

Key Theme – Human Nutrition

Title: Healthy Living A-Z

Issue:
To Increasing fruit and vegetable intake and improving safe food handling practices to lower disease risk.

Diet related health conditions cost society an estimated $400 billion annually. This includes health expenditures and lost productivity resulting from illness and death. It is estimated that improved dietary behaviors might prevent at least 20% of the annual deaths from diet related health conditions. Encouraging increased fruit and vegetable consumption is a cost-effective approach to lowering disease risk and reducing health care costs. Eating plenty of fruits and vegetables can help reduce the risk of developing may diet related health conditions including heart disease, stroke, type 2 diabetes, and some types of cancer. However, according the Centers for Disease Control 80% of Oklahomans eat fewer than 5 fruit and vegetable servings per day. Added to the problem that Oklahomans are not eating enough fruits and vegetables are reports of occasional outbreaks of foodborne disease associated with fruits and vegetables. These reports threaten to overshadow the important dietary and medical role that fruits and vegetables play in ensuring good health. According to the Centers for Disease Control 20% of all traceable foodborne disease outbreaks result from improper handling in the home including poor sanitation, improper hygiene and cross contamination.

What Has Been Done:
Oklahoma Cooperative Extension Service is conducting a four-year Impact Program entitled "Healthy Living A-Z". The "Healthy Living A-Z" Impact Program educates Oklahoman youth and adults on the 5-A-Day message (fruit and vegetable intake) and safe food handling techniques. The goal of the "Healthy Living A-Z" Impact Program is to encourage more Oklahomans, both your and adults, to increase fruit and vegetable intake and practice safe food handling techniques thereby reducing the risk of diet related diseases.

Impact(s):
The “Healthy Living A-Z” Impact Program has reached 1101 Oklahomans, 386 youth and 715 adults. Important dietary improvements were observed among Oklahomans, both youth and adults, who participated in the "Healthy Living A-Z" Impact Program including a statistically significant:

- Increase in fruit intake
  30% increase in consuming the recommended 2 fruit servings per day
  Average number of fruit servings increased from 1.2 to 2.1 servings per day

- Increase in vegetable intake
  21% increase in consuming the recommended 3 vegetable servings per day
  Average number of vegetable servings increased from 1.7 to 2.5 servings per day

In addition, statistically significant improvements in safe food handling practices were observed among Oklahomans, both youth and adults, who participated in the "Healthy Living A-Z" Impact Program including:

- Increase in hand washing
- Increase in washing fresh fruits and vegetables
- Increase in using a separate cutting board for fruits and vegetables to avoid cross contamination

These outcomes represent improvements in health status and decreased risk for heart disease, stroke, diabetes, and certain types of cancer.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Title: Jackson Unit Community Nutrition Education Programs (CNEP)

Issue:
CNEP educates limited-income families willing to participate in a long-term educational experience that is designed to change behavior in food consumption patterns, safe food handling and food budgeting skills.

What Has Been Done:
CNEP has strived to hire Nutrition Education Assistants (NEAs) with a strong understanding of the barriers many limited-income families face in achieving a healthy diet. The NEAs enroll limited-income families into the Fresh Start, Nutrition and You Program to educate participants in the use of resources available to assist them in consuming healthy foods every day. The education is tailored to meet the needs of diverse ethnic groups and those with Diabetes. The NEAs deliver an in-depth nutrition education program, coaching the families towards positive nutrition behaviors. Some NEAs also work with school-aged children in group settings. The NEAs, in the Jackson Unit (Beckham, Greer, Harmon, Jackson, Kiowa and Washita counties), have been providing this education for the past six years.

Impact:
The Jackson Unit CNEP provides nine job opportunities to local citizens, which contributes $194,299, to the local economy, in salary and benefits. In 2002, CNEP educated 318 program families, encompassing 946 persons. 213 school-aged children were also educated in group settings. Research shows that healthy eating habits developed in children can last a lifetime. The racial profile for the CNEP participants averaged 65% White, 16% Hispanic, 12% Black, 4% American Indian and 1% Asian. 92% of the program graduates made a positive change towards a healthy diet, and 42% of the graduates, less often ran out of food before the end of the month. CNEP has actively sought to build relationships with local agencies and businesses. These relationships have helped to strengthen participant recruitment efforts, and have provided participants with increased food availability through gleaning and food recovery programs.

Scope of Impact: State Specific

Funding Sources: Smith Lever; State; County

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CSREES Goal 4: Greater harmony between agriculture and the environment

Overview

Oklahoma key program components contributing to this goal include: Integrated Pest Management (IPM), water quality, animal waste management, pesticide applicator training, pesticide impact assessment, natural resource stewardship, and sustainable agriculture. This goal contains many programs that are highly integrated with programs included in other goals, particularly goals 1 and 2. In the Oklahoma 5-year plan of work, IPM programs, for example, were included in goal 1, yet most are here-in reported under this goal because of the theme designations established by CSREES. During the year, 1,391 demonstrations, meetings, and conferences were conducted under this goal. These activities were attended by 37,649 participants during the year. OCES personnel conducted 4,722 visits and consultations related to this goal.

Integrated pest management and related pest management teams exist for wheat, alfalfa, soybeans and peanuts, greenhouse and horticulture products, pecans, cotton, grapes, and vegetables. These teams are very active and many of their programs are truly integrated between production and pest management practices. A related emphasis area is in pest applicator education and training. These areas work together on many programs. Another highlight set of key programs under this goal are those programs in natural resource stewardship. Natural resource management programs are also reported under this goal.

As mentioned, IPM programs comprise a significant role in education and information provided each year. For example, the Caddo County Peanut Disease FAX/Advisory helps producers in the county reduce fungicide applications for peanut leafspot diseases. During the past two years, an average of 80 producers representing over 90% of the county's 26,000 acres of peanut production, saved an average of three fungicide applications. This resulted in a $232,000 savings in fungicide and application costs. In addition, potential costs of cleaning fungicide from the Fort Cobb Lake Reservoir, with 15,000 people using over three billion gallons of water per year, of three million dollars per year have been averted. Another IPM program, Integrated Management of Sclerotinia Blight in Peanuts, through demonstration and testing of resistant varieties and associated management systems has resulted in increased yields of 750 pounds per acre and netted about $3.2 million dollars statewide to producers in 2002.

For each of the past five years, another IPM program, Statewide Alfalfa Email Advisory, has helped to reduce the number of insecticide applications for weevils and aphids on alfalfa from 2.0 to less than 1.2 annually. This results in a $3.8 million cost saving to farmers and a 40% reduction in pesticide applied. The IPM musk thistle control program continued the highly successful campaign to use biological control agents in controlling this invasive, noxious weed. Extension Educators and landowners collected 62,000 head weevils and 39,500 rosette weevils in NE Oklahoma and released them in over 100 sites across the state. A website is now available at http://ipm.okstate.edu/ipm/weeds/muskthistle.html; this site contains much information for extension educators and landowners. Landowners have reported between an 80% to 95% decrease in number of musk thistle plants in areas where they used the integrated approach. The

use of the biological control agents will likely result in a 60% decrease in herbicide use in state mandated control and about a $3,400 cost savings per producer over a ten-year period. This program was extended into far western Oklahoma during 2002. In Washita County, for example, it reached 750 agricultural producers and landowners representing over 12,000 acres of thistle infected land. A survey showed that these landowners reduced chemical use by 2,200 gallons of herbicides and increased forage production.

Ecosystem restoration of native prairies, shrublands and forests was begun 15 years ago. Through education and demonstration on application of prescribe fire, Extension has increased the number of acres burned (prescribed) to approximately 800,000 acres. This has resulted in improved habitat for two endangered species and several economically important species. The program has had a similar impact on prairie and shrubland with over one million acres presently prescribed burned improving water quality, habitat for several declining species and economically important species and beef cattle. Non burning techniques to reduce eastern red cedar infestations have been developed and demonstrated reducing cost of clearing from an average of $80 per acre to $11 per acre. Municipal governments have begun to endorse this program as they try to prevent loss of life and property from wildfires in the wildland-urban interface.

Pesticide Applicator Education efforts resulted in over 2,600 applicators taught proper pesticide delivery methods. Education also helped reduce the amount of phosphide fumigants used while improving the safety of their use. Education for Oklahoma Department of Transportation Pesticide Applicators resulted in a 65% reduction in the use of atrazine in five years as well as a cost saving for state and local governments. Pesticide safety education with the green house and nursery industry has resulted in improved compliance and worker safety. Poultry Waste Management Education provided over 100 hours of education resulting in over 1,300 poultry producers receiving at least three hours of continuing education to maintain certification in waste management in 2002 (in addition to the 100 plus applicators and new growers that received the nine-hour initial training). This certification is mandatory for producers to continue in business. One result of the education is that soil nutrient testing and litter nutrient testing has increased 75%. The number of poultry producers keeping litter application records has increased from 34% in 1997 to 90% in 2002 and those using litter storage facilities tripled since the education programs began four years ago. Examples of a broad water quality education and pesticide education programs reaching underserved audiences, suburban and urban audiences are also reported in this goal in the statements to follow.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Total expenditures represented by programming and related support for this goal are approximately $2.4 million with $0.6 million from Smith Lever funds. About 28 professional and paraprofessional FTEs contributed to the goal last year. Following are some example program impact statements arranged by CSREES Key Theme.

Impact Statements Goal 4

Key Theme – Biological Control

Title: Noxious Weed Control in Pastures – Washita County

Issue:
Musk thistle was accidentally introduced into the United States and was first recorded in 1853. It originated from Europe and has spread from the eastern seaboard throughout most of North America. It has become a weed of considerable economic importance, especially in range and pasturelands. Musk thistle was first identified in Oklahoma in 1944. It has spread over much of Oklahoma and is currently a serious weed problem in Washita and surrounding Counties In 1994; musk thistle was declared a noxious weed in four northeast counties. The 1994 law has been amended twice, designating musk thistle as a noxious weed in all counties of Oklahoma. Current Oklahoma law requires control of musk thistle by landowners.

Musk thistle is very aggressive and invasive. Movement of contaminated hay to uninfected areas and dissemination of airborne seed cause spread and proliferation of musk thistle from mature plants. Musk thistles reproduce entirely by seed, with each plant capable of producing 10,000 seeds. Some may germinate the first year while others may remain viable in the soil for as long as five years. Moderate infestations of musk thistle reduce pasture yields approximately 20%. If uncontrolled, thistle populations will prevent grazing, resulting in no economic return. A survey by the Oklahoma Department of Agriculture to Washita County Extension Office, Washita County Commissioners and County USDA FSA office showed Washita County to have 30,000 acres or 30% of the total acres in the county effective in 1995. This number has increased to nearly 45,000 acres by 2002. Many county producers have sprayed these areas with chemicals by using more than 8,400 gallons of herbicides that could effect the environment.

What Has Been Done:
Two multi-county educational programs in Washita County attended by over 14% of the county's producers have been held to update producers on key management information. The major topics of these programs have been, 1) Identification, 2) Control, both chemical and natural, 3) Economics.

A special educational brochure was developed and sent to over 750 or 68% or the producers in extension newsletters and disturbed to area agriculture business in Washita County.

The collection and release of musk weevils have taken place the past three years and plans for another schedule in May are in the works. The first collection and releases in western Oklahoma has been mainly extension and Dept. of Agriculture personnel. The goal is to be able to collect and release by 2004, and in on schedule to do so.

Impact:
Producers gained key economic and control skills in determining the bet ways to control the musk thistle. Because of the educational programming efforts the agriculture community as well

the general public has a better idea of the problem and ways to deal with it. By reaching 750 agriculture producer and land-owners in Washita County. Securing 73 musk weevil nursery sites in the county of that 43 were sites in 2002 that has over 12,000 acres of effected land. These agriculture producers has reduce their chemical uses by nearly 2,200 gallons of herbicides this past year and increase production 25 %. Twenty-eight individuals becoming in involved with Extension programming for the first time.

Scope of Impact: County

Funding Sources: County, State, Smith-Lever

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Key Theme – Forest Resource Management

Title: Herbicide Workshop for Non-Industrial Forest Landowners

Issue:
Private Non-industrial landowners control nearly 70% of Oklahoma's forest resources and represent a crucial supply of raw materials for Oklahoma's $12 billion plus forest products industry. Many of these landowners lack the expertise to efficiently manage their forests to produce optimal volumes of timber, wildlife habitat, and recreational opportunities as determined by their ownership goals and objectives. Herbicides can be an effective tool to increase productivity of these forests by reducing competition from undesirable species, reducing invasive plants, increasing desirable forage for wildlife, and enhancing recreational and forest protection activities. However improper use of herbicides can have negative effects on forest productivity, water quality, plant diversity, and profitability. The Oklahoma Woodland Owners Association has identified a need for information and discussion on the effective use of herbicides as a matter of great importance for its members. As a result of this demonstrated need, a herbicide workshop was developed for non-industrial forest landowners, consultants, and technical service providers.

What Has Been Done:
A one-day herbicide workshop was developed in cooperation with UAP Timberlands, a provider of forestry herbicides and technical assistance. The workshop consisted of 4 hours of training in the storage, handling, application, and disposal of common forestry herbicides as well as a field tour of treated areas and a discussion of the results of treatment on productivity, survival, and control of competing vegetation. The workshop drew 19 participants representing forest landowners, forestry consultants, state agency foresters, and Natural Resources Conservation Service personnel.

Impact:
This workshop demonstrated that effective herbicide use could provide significant benefits to non-industrial private forest landowners throughout southeastern Oklahoma. In addition participants gained knowledge on the efficient use of chemicals, safe handling and storage, as well as environmentally friendly disposal methods. The participants estimated the value of this single workshop (in terms of increased productivity, material savings, and reduced labor) to exceed $37,000 on their own lands. In addition 100% of the attendants indicated that they would use the information obtained during the workshop on their own lands. Ninety-three percent of the attendants indicated that they would share this information with other landowners, indicating that this training will have a ripple effect throughout the forestry community. Given that private non-industrial forest landowners control nearly 9.5 million acres of forests in Oklahoma, the magnitude of this information sharing could be quite substantial.

Scope of Impact: State

Funding Sources: Federal, State, Smith-Lever

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Title: Oklahoma Master Woodland Owner Program

Issue:
Although most Oklahoma forestland is owned privately, comparatively few of these owners have plans to manage their forests in a sustainable fashion. Non-sustainable practices and lack of knowledge among landowners can lead to environmental damage as well as economic loss. As public demand for all forest benefits such as wood products, wildlife, watershed protection, recreation and carbon sequestration continues to increase, it is important that more private landowners embrace the concepts and practices of sustainable forest stewardship. Oklahoma's Master Woodland Owner program is a "train-the-trainers" type of education program designed to address these concerns by producing knowledgeable forest landowner volunteers to assist in programs promoting sustainable forest management.

What Has Been Done:
Initial training began in April 1999, and was completed in June 2000. The training sessions included basic forest ecology, forest health, best management practices, pine and hardwood management, and taxation and estate planning. A "class reunion" was held in July of 2002, and featured both training and planning. The direction of the program into the future was explored with the graduates along with other invited landowners and forestry professionals. We plan to

enlist the Master Woodland Owners in promoting current efforts to revitalize the Tree Farm program in Oklahoma.

Impacts:
Graduates report over 1,000 volunteer hours since graduation, with practices adopted on an estimated 2,900 acres. Most volunteer hours were visits with landowning neighbors, but assistance with landowner field days, State Fair exhibits and youth environmental education also is reported. Several graduates are interested in developing demonstration areas featuring different aspects of good forest management, including low-input uneven age management and best management practices. Potential future impacts include increasing the number of woodland owners with sustainable management plans through the Tree Farm System.

Scope of Impact: State specific.

Funding Sources: State, Smith-Lever

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Key Theme – Hazardous Materials

Title: Worker Protection Standard Assistance for Oklahoma Greenhouses and Nurseries

Issue:
Oklahoma Greenhouses and Nursery are the focus of Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) Worker Protection Standard (WPS) inspections because they usually employ non family members in operations where pesticide applications are made that come under EPA's Worker Protection Standard law. This program is to help Oklahoma greenhouses and nurseries comply with WPS rules.

What Has Been Done:
The Pesticide Safety Education Program in conjunction with ODAFF provides assistance to greenhouses and nurseries that request help. ODAFF conducts yearly WPS inspections on greenhouses and nurseries in Oklahoma. When a greenhouse or nursery is found to be out of compliance, the ODAFF inspector then refers that greenhouse or nursery to the OSU PSEP program for compliance assistance. OSU PSEP either by phone or in person provides the educational material needed by the grower to come into compliance with WPS.

Impact:
Over 20 WPS contacts were made with growers needing assistance. OSU PSEP mailed or provided numerous WPS materials such as posters, booklets, and videos to growers to come into compliance. Also OSU PSEP traveled to six grower's facilities for WPS compliance help and training. This program helps growers attain the materials and education necessary to comply with WPS. WPS fines can range from $100-$1000 per violation. So using an average of $500 fine per producer OSU PSEP helped the 20 producers avoid $10,000 in potential fines.

Funding Source(s): State, Grant, PSEP

Scope of Impact: State Specific

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Title: Canadian County Extension "America Recycles Day"

Issue:
Providing citizens opportunities to properly dispose of recyclable materials such as tires, batteries and used oils is important to keep such materials out of landfills, roadside ditches and groundwater. Canadian County OSU Extension has held several recycling days in conjunction with "America Recycles Day". Participation continues to grow as 158 local citizens utilized the OSU Coop Extension event this year to bring an ever-increasing amount of recyclable materials in for proper disposal. The challenge at hand is to present citizens with environmentally friendly alternatives for discarding recyclable materials, which actually have monetary value. Canadian County Extension has taken the lead to gather, sort and deliver recyclables to statewide recycling companies for processing.

What Has Been Done:
Over 286 citizens of Canadian County have responded enthusiastically to this OSU County Extension opportunity to "do the right thing" by delivering 2238 car tires, 231 large truck tires, 165 car batteries, and 1830 gallons of used oil to the county fairgrounds for recycling during the past two years. These tires have been delivered to processing plants in Duncan and Oklahoma City. These plants receive $1 per car tire and $3 per truck tire out of the state's tire indemnity fund to recycle tires collected at the events. Our "America Recycles Day" cooperating partner, the Oklahoma Environmental Management Authority, sells the car batteries to a smelter to help defray the expense of the roll-off boxes used to collect and move the tires from the fairgrounds to the recycler.

Impact(s):

Over the past two-year period our event has gathered and recycled:

- 2238 car and 231 semi-truck tires - preventing them from possibly ending up in roadside ditches or needlessly lying around to provide breeding grounds for mosquitoes that carry West Nile Virus, which is of increasing concern throughout the United States as a human health hazard.
- 1830 gallons of used oil has been put to good use saving county taxpayer dollars and providing local citizens an environmentally friendly disposal alternative that prevents the contamination of precious groundwater resources caused by illegal dumping of oil.
- 165 car and tractor batteries have been recycled and a hazardous source of lead removed as an environmental contaminate around homes and farmsteads.
- Used oil collected for recycling is taken to Canadian County District #1 shop, where it is burnt to heat the shop in winter. This benefits county taxpayers by saving taxpayer dollars that would normally go to buy natural gas to heat the shop. Canadian County Commissioners have calculated that using oil instead of natural gas saves taxpayers about $40 per day. County Commissioners feel that extension's collection effort has provided enough oil to heat the shop for 25 days. Therefore, the benefits of the impact have been twofold; saving county taxpayers over $1,000 in heating bills and preventing used oils from contaminating our precious ground water resource.

Scope of Impact: State Specific

Source of Funds: County, private, state, Smith-Lever

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Key Theme – Integrated Pest Management

Title: IPM Helps Oklahoma Landowners Fight Invasive Thistles

Issue:

Musk thistle has become a weed of considerable economic importance, especially in pasturelands. It reduces forage yields and forage quality by competing with the desirable forage plants for water, soil nutrients, and light. Musk thistle was first identified in Oklahoma in 1944, and by the end of 2001, 62 counties in Oklahoma reported musk thistle infestations. Infestations of musk thistle in improved pastures cause significant economic losses in Oklahoma. In 1998, Oklahoma legislators passed a law designating musk thistle, along with scotch and Canada, as noxious weeds in all counties of the state. Based on a 1995 pasture survey, average acreage of improved pasture for each producer in Oklahoma ranged from 40 to 160, depending on location

in the state. The average cost of controlling musk thistles for 10 years using herbicides would be $5,200 per producer. There are about 7.1 million acres of improved pastures in Oklahoma. Thus, the statewide cost of controlling musk thistle with herbicides for 10 years, if all improved pastures were infested, would be $461,500,000.

What Has Been Done:
An Oklahoma IPM musk thistle control program was developed in the early 1990s and has been implemented statewide through cooperative efforts of researchers, Extension personnel, and landowners. This integrated program focuses on 1) increasing public awareness of the problem, 2) development of educational information, 3) demonstrating various control options, and 4) introducing new biological control agents. Numerous demonstration and educational meetings have been conducted. Extension educators and landowners collected approximately 62,000 musk thistle head weevils in four north central/north eastern counties in the Spring of 2002; these were released into 22 counties, primarily in the western portion of the state. In addition, 39,520 rosette weevils were also collected and released. To date, this program released 396,000 musk thistle head weevils across the state. Detailed establishment and impact of the thistle head weevil and rosette weevil in Oklahoma were documented in a Masters thesis published in 2001, and three scientific manuscripts are in press. A Web site was developed for OCES use, at http://ipm.okstate.edu/ipm/weeds/muskthistle.html; this site contains downloadable versions of current fact sheets and reports, PowerPoint presentations, and current information on thistle round-up activities (such as maps, directions, what to bring, etc.). Two PowerPoint presentations on integrated management of thistle were developed into slide sets, with one copy sent to each District office. As a consequence of the availability of these materials, many county and area Extension educators were able to conduct more local programming on thistle management to landowners (See Washita County program this goal). The following publications were developed in 2002: two press releases, a set of instructions (with color pictures) to accompany weevil release cups, and one brochure on thistle management throughout the year. In addition, "weevil cards" were constructed of actual rosette and head weevils, and IPM, Water Quality, NRCS, and the state Dept. of Agriculture developed durable metal signs to designate where weevils were released. In 2002, one sign was given to each participating landowner free of charge; these signs will be available for purchase thereafter.

Impact:
Landowners in NE Oklahoma have noted from 80% to 95 % decrease in number of musk thistle plants in areas where they are using an integrated approach that includes use of the musk thistle weevils. Head weevils were found on over 80% of the musk thistles checked in northeastern Oklahoma. Many landowners became concerned about controlling musk thistle after the 1998 "Thistle Law." Significant cost saving is possible when musk thistle weevils are integrated into musk thistle management systems. Spraying of pastures could be phased out after a couple of years and no annual border spraying would be required. Cost associated with an integrated approach using weevils would be $1,600 for spraying and $200 associated with trips to collect 500 weevils (though Extension educators have collected weevils and provided them at no cost to many producers). This represents an average savings of at least $3,400 per producer over the first 10 years while at the same time significantly reducing the amount of herbicides broadcast on the land. Using the integrated approach results in a 70% reduction in herbicide use, thus reducing risk to the environment and applicator. By making landowners aware of damaging

effects of musk thistle, it is expected that they will become more involved in control and preventing spread of all invasive weeds.

Funding: Smith Lever; State

Scope of Impact: State Specific

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Title: Integrated Management of Sclerotinia Blight of Peanut

Issue
Sclerotinia blight has been the most destructive disease of peanuts in Oklahoma since the mid 1980's. Growers suffered yield losses of 50% or more in years when cool, wet conditions prevailed before harvest because effective control strategies were not available. Sclerotinia blight threatened the very existence of peanut production in Oklahoma as yields were sometimes reduced below 2,000 lb/A. In the early 1990's, the resistant variety Tamspan 90 was released and widely planted. Acceptable yields of 3,000 to 3,500 lb/A were produced in infested fields without the use of fungicides. However, problems with web blotch disease and marketing Spanish peanuts reduced the acreage of this variety. Tamrun 96, a high-yielding runner variety, was released in 1996, but no resistance to Sclerotinia blight was claimed. In extension demonstrations, this variety produced acceptable to high (>4,000 lb/A) in infested fields, depending upon prevailing disease pressure. Yields for this variety were shown in the demonstrations to be superior to Tamrun 98, a variety released for resistance to Sclerotinia blight. However, growers suffered damage and apparent yield losses from the Sclerotinia blight in years when disease pressure was severe. To remain competitive under the current economics of peanut production, a management strategy was needed to improve production levels in infested fields.

What Has Been Done:
Field demonstrations have been conducted each year in Oklahoma from 1996 to 2002 to evaluate the response of peanut varieties to fungicides for control of Sclerotinia blight. Data from these trials showed that use of the fungicide fluazinam increased yields of all varieties except Tamspan

90 by at least 1,000 lb/A. This demonstrated the additive effects of varietal resistance and fluazinam. Furthermore, applications made just after disease symptoms appeared, resulted in disease control equivalent to a high-input, preventive program. Fluazinam was registered for use on peanuts for the first time in 2001. The judicious use of fluazinam in conjunction with resistance varieties has been promoted at field days and grower meetings, and through mass media and extension publications.

Impact:
Recent surveys indicate that about 45% of the 57,000 acres cropped to peanut in 2002 is infested with Sclerotinia blight. The disease became established in late August and became severe by harvest because of an extended wet period that precluded harvest during October. About 80% of the infested acreage was planted to Tamrun 96 and most infested fields received a single application of fluazinam. Based on results of demonstration trials, the integrated management program increased yields by at least 750 lb/A and netted about $3.2 million statewide in 2002. The increased production was reflected in the highest state-wide yield (2,800 lb/A) ever reported for Oklahoma in 2002.

Scope of impact: State specific; Integrated Research and Extension

Funding Sources: State, Smith-Lever, grant

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Title: Providing Vital Entomological and Production Updates to Enhance Cotton Insect Control Decisions in Oklahoma

Issue:
A statewide network highlighting Extension Entomology activities has evolved to provide timely information to the cotton industry. Keeping agri-business, consultants, and cotton producers informed of insect pest trends (surveillance), control strategies, applied entomological research results (local and regional), and growing degree accumulations (collected by Mesonet, Oklahoma's statewide, automated weather system) throughout the growing season helps fine-tune management strategies unique to each production region of the State – Southwest, West Central, and Northern. Adjusting control strategies to individual production schemes reduces environmental concerns while increasing profitability through efficient insect control.

What Has Been Done:

The challenge is to keep pace with the expanding cotton acreage across the state. To help meet this need the Cotton Sentry (a weekly insect newsletter) is available in two formats – electronic and mail. It is delivered to interested persons throughout Oklahoma, Kansas and Texas. Current entomological information and past Cotton Sentry issues are available at www.osu.altus.ok.us. Annually a Southwest Oklahoma Entomology Report is published highlighting entomological activities. Key field surveys are also conducted to determine population trends and pest status across the state. Bollgard™ technology (transgenic cotton) has been the focus of the applied research conducted. Regional turn-row tour and scouting workshops are held at key points throughout the growing season for hands-on training of scouting procedures and plant mapping techniques.

Impact:
This educational network continues to provide key entomological information strengthening the foundation for cotton IPM across the state. Cotton Sentry subscription list has steadily increased since its conception in 1990. In 2002, 87% of the subscribers (244) received the Cotton Sentry electronically compared to 13% of the subscribers (36) preferring the mail edition. Reducing insecticide usage is extremely difficult with an active boll weevil eradication program underway. However, with the introduction Bollgard™ technology in 1996 insecticide applications have dropped accordingly. Conventional cotton managed the same as Bollgard™ cotton received 3.7 more insecticide applications per season (1996 – 1999). Field research indicates the value of investing in Bollgard™ technology in 2002 was worth $65.66 per acre. Since its introduction in 1996 investing in Bollgard™ is worth $22.44 per acre (weighted average) or $7,353,027 (Bollgard™ acreage = 327,615 acres for 7 years).

Scope of Impact: State Specific

Funding Sources: Grant, State, Smith-Lever

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Title: OSU Statewide Alfalfa email Advisory

Issue:
Alfalfa production occurs throughout Oklahoma and in some years may represent in excess of $70 million to the state's economy. Alfalfa growers, consultants and county educators often try to anticipate arrival of significant pests each year, but because early season growing conditions are often unpredictable, it is difficult to accurately predict the impact of the pest that has the greatest effect, the alfalfa weevil. With this need in mind, an advisory system was established in 1996 that utilized FAX and email capabilities to inform growers across the state about early

season alfalfa weevil egg populations in January and February. Initially, this system sent nearly 50 FAX transmissions and only a few emails. In 2002, we grew to service every county educator, nearly 70 consultants and over 150 growers, applicators, chemical representatives and others concerned with alfalfa in Oklahoma. In addition, the advisory operates now as an email system and on our departmental newsletter "The disease and insect advisory." The challenge is to provide the clientele with a means of anticipating the arrival of damaging alfalfa weevil populations and increase timely management of this pest. This system helps growers reduce insecticide inputs and costs of management by creating an atmosphere where commonly one, well-timed application of insecticide can suffice in controlling pest problems.

What Has Been Done:
Data for this advisory are gathered once in January and again in February or early March. Alfalfa weevil egg populations are monitored from the major alfalfa growing regions across the state. Typically, 10-14 sites are chosen and 2-3 days are spent in sampling fields. In less than one week, alfalfa weevil egg populations are counted, means calculated and information dispersed. An email list has been compiled over the last 4 years and continues to grow at every meeting conducted. The email news release is sent out 1-3 days after data is gathered and every participant gets the timely information directly from the Land-grant University (OSU). Simultaneously, the information is sent to County educators via email and through our departmental newsletter to eliminate concerns over protocol. The news release contains pertinent information about alfalfa weevil egg populations, degree days and egg viability in all locations sampled. In addition, any recommendations are included that might provide participants some idea about the impact of insects in the upcoming season.

Impact:
This program has resulted in reduced applications of insecticides over the past five years. In 1989, the average number of insecticide applications made to alfalfa for weevils and aphids was nearly two. Since this time the number of applications is now much closer to one (1.2 average statewide). Based on average cost of an insecticide application (about $12.00/A) and assuming a reduction of 0.8 applications per acre per year this represents about $3.8 million in savings to growers. In addition, the positive effect on the environment and the many applicators involved in these treatments. The multiplication of information concerning this data has taken the form of County based and IPM news releases through additional newsletters.

Scope of Impact: Statewide.

Funding Sources: State, Smith-Lever

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Title: 2002 Caddo County Peanut Leafspot Disease FAX/Advisory

Issue:
Caddo County is Oklahoma's leading peanut production county with over 26,000 acres planted in 2002. Caddo County's peanut acres account for more that half of Oklahoma's peanut acres according to the Caddo County Farm Service Agency. The Caddo County Peanut Disease FAX/Advisory is a program developed to help Caddo area peanut growers keep track of peanut leafspot disease conditions. By tracking the leafspot disease conditions peanut producers can determine when fungicides applications are most effective and, more importantly, when foliar fungicides are not needed. Reduced use of pesticides saves the producer money, protects the environment from unnecessarily applied pesticides. Groundwater runoff of the area is mainly into the Fort Cobb Lake Reservoir, which is the primary water source for two communities (Anadarko & Chickasha, OK) with over 15,000 people using over 3 billion gallons per year according to the Fort Cobb Master Conservancy Dam Office.

What Has Been Done:
The FAX/Advisory follows a disease development model developed by Dr. John Damicone, OSU Extension Plant Pathologist, to determine potential hours of peanut leafspot infection. Weather data, needed for the model, includes humidity, temperature, and rainfall. This data is collected from MESONET, Oklahoma's statewide, automated weather system. Data is applied to the model and the results plotted to a calendar. The FAX/Advisory was faxed twice per week from the Caddo County OSU Extension Office to 12 area agri-businesses where peanut farmers routinely visit. When conditions are extremely dry or extremely wet – additional recommendations (Peanut Leafspot Disease Advisory Alert) are included to alert growers of current conditions.

Impact:
Our latest evaluation data (11/2002) shows that during the summer of 2002 that approximately 75 peanut producers were provided information on leafspot disease development from the Peanut Leafspot Disease FAX/Advisory. Most growers saved an average of 2 fungicide applications this year. Over $77,000 in fungicide and application costs to peanut producers was saved in 2002, plus the positive effects on the environment from not using unnecessary chemical applications. Reducing the number of fungicide applications from 6 to 4 for the average producer and reducing the potential for pesticides to be moved into the Fort Cobb Lake Reservoir with surface runoff. Over a 4-year period from 1999 through 2002 an estimated $700,000 in production expenses has been saved by peanut producers who have followed the Caddo County Peanut Leafspot Disease FAX/Advisory. Additional potential cost saving from cleaning fungicide from three billion gallons of water, should chemical levels become too high, would be approximately three million dollars per year.

Scope of Impact: State specific

Funding Sources: County, State, Smith-Lever

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Title: Integrated Pest Management of Greenbugs In Wheat

Issue:
Oklahoma farmers grow more than 6 million acres of winter wheat each year, making Oklahoma the fourth largest wheat producer in the United States. Cereal aphids such as greenbug and bird cherry-oat aphid are major, but sporadic pests of wheat that can cause significant reductions in yield through direct feeding and by transmission of the virus that causes Barley Yellow Dwarf disease. In 2001-02, more than 700,000 acres of wheat were treated for greenbug infestations, costing producers an estimated $5.6 million. Because of narrow profit margins, producers must make informed decisions on the necessity of controlling aphid populations. Correct decisions, using accurate tools for aphid population assessment, can prevent costly yield losses from occurring due to damaging greenbug infestations and increase profitability of wheat production. Eliminating unnecessary insecticide applications can preserve profitability while also enhancing environmental quality.

What Has Been Done:
A sampling tool, called "Glance N' Go" was developed to provide wheat producers/crop consultants with an accurate, easy-to-use, sampling program for greenbugs. Glance n' Go" is based upon research that was conducted in over 100 wheat fields in Oklahoma over two years. "Glance n' Go" uses a strategy called binomial sequential sampling, which allows producers to accurately assess greenbug numbers by examining and counting infested tillers instead of counting aphids. Sampling can be discontinued anytime the thresholds for treating or not treating are exceeded. Preliminary evaluations of "Glance n' Go" suggest that it can reduce sampling time in wheat by 30% over currently recommended methods while providing accurate estimates of aphid density.

This past year, the ***Greenbug Decision Support Expert System***, a computer-based expert system was developed and placed on the Department of Entomology and Plant Pathology's web site at http://entoplp.okstate.edu/greenbug/index.htm. This expert system was developed by Dr. Norm Elliott, USDA-ARS scientist at the Plant and Water Conservation Research Laboratory, Stillwater, OK. This expert system contains several modules that can assist producers and crop consultants with making decisions on managing cereal aphids in winter wheat. It contains a module that calculates economic thresholds for greenbugs based upon the value of the crop and the price of control using a greenbug/winter wheat injury model that was developed through 6 years of research. Once the greenbug treatment threshold has been calculated, the expert system provides the user with the appropriate set of "Glance n' Go" sampling forms for immediate use.

Impact:
An assessment of wheat growers is being conducted that is designed to measure diffusion and adoption of this plan over the next 5 years. A initial survey of producers that was conducted this past fall established that less than 1% of respondents had ever heard of Glance N' Go. A second survey, to be conducted in 2-3 years, and a third survey that will be conducted in 4-5 years will measure changes in awareness, adoption and impact of this sampling plan as it is made available through extension educational programs.

Twenty-one extension educators from the major wheat producing counties in Oklahoma were trained on the use of the Greenbug Pest Management Expert System and "Glance n' Go" sampling in 2002. Over 50 Certified Crop Consultants received training on the use of the Greenbug Pest Management Expert System and "Glance n' Go" sampling in 2002.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific; Integrated Research and Extension

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Key Theme – Natural Resources Management

Title: Ecosystem Restoration of Native Prairies, Shrublands, and Forests

Issue:
Oklahoma land managers need prescribed fire, prescribed grazing, and invasive species information to restore their land to a productive and biologically diverse state. Municipal governments need information on reducing wildland fuels in the wildland-urban interface.

What Has Been Done:
Eleven demonstration and research sites are located in nine counties representing the major native plant communities in Oklahoma. Three of the sites have been producing research data and providing sites for field days for over 15 years. Five sites are located in oak-pine, oak-hickory, or post-oak/blackjack oak forests. Four sites are located in shrub-land (sand shinnery oak and sand sagebrush) sites. Three sites are located in tallgrass and midgrass prairie. This restoration program is based on using an ecosystem approach of prescribed fire and herbivory patterns based on historical landscape models producing heterogeneity. This includes restoration of habitats for both common and endangered wildlife species and domestic grazing animals (e.g. beef cattle). In the past five years, more than 250 field days and orals presentations have been presented to more than 11,000 participants. In addition, 3 prescribed burn associations made up of ranchers have formed to facilitate the restoration process on private land. We have also developed a new

technology that significantly reduces the cost of clearing large eastern redcedar. This technology uses a ball and chain pulled by bulldozers and reduces the cost of clearing from $60-$100 per acre to $11 per acre.

Impact:
During this time, the number of acres burned in Oklahoma's forested habitat has increased by more than 100 percent to approximately 800,000 acres. This increase has resulted in improvement of habitat for two endangered species, red-cockaded woodpecker and black-capped vireo, and economically important wildlife such as the wild turkey and white-tailed deer. These restored forests have provided over 250,000 acres of valuable grazing resources to Oklahoma ranchers that were previously unusable. Over one million acres of prairie and shrubland have been burned resulting in the reduction of invasive plants such as eastern redcedar and improving habitat for lesser prairie chicken (a declining species), mule deer, white-tailed deer, bobwhite quail, and beef cattle. Prescribed fire increases stocker cattle production by 10-15% and body condition score by one on beef cows. The restoration program has improved water quality and water yield. In addition to these activities on private lands, three National Wildlife Refuges and six Oklahoma Department of Wildlife Conservation management areas have implemented prescriptions as a result of this program. We have also worked with municipal governments to manage wildland fuels by using prescribed fire and mechanical techniques. The goal is to reduce the potential for catastrophic wildfire and associated loss of life and property. In conjunction with the Oklahoma Department of Agriculture, Food and Forestry, Forestry Services we are working with the cities of Edmond, Stillwater, Oklahoma City, Norman, and Tulsa to implement the Firewise Program for wildland fuel reduction.

Funding Sources: Smith-Lever; Grants; Renewable Resources Extension Act (RREA), USDA Forest Service, USDA Natural Resources Conservation Service, US Fish and Wildlife Service Kerr Center for Sustainable Agriculture, and National Interagency Fire Center.

Scope of Impact: State Specific

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Key Theme – Pesticide Application

Title: Continuing Education Helps the Oklahoma Department of Transportation Manage Roadsides Cost Effectively

Issue:
Oklahoma Department of Transportation (ODOT) employees are responsible for vegetation management on over 230,000 acres of interstate and state highway rights-of-way in Oklahoma.

A portion of this acreage is part of the I-35 International Trade Corridor. Proper vegetation management results in vegetation that is attractive as well as functional in that it stabilizes the road surface against soil erosion and provides maximum visibility for the millions of motorists using the highway system. The natural process of ecological succession results in the colonization of the roadside by some undesirable plants (weeds) that do not offer adequate soil stabilization or maximum visibility for the motorist. Unmanaged weedy roadsides can also serve as a refuge for reinfestation into adjacent lands. ODOT employees require continuing education as well as consulting expertise regarding the most cost effective vegetation management and weed control strategies. ODOT vegetation managers must not only maintain Oklahoma Pesticide Applicator Certification (PAC) status but also Equipment Competency Certification (ECC) status within ODOT.

What Has Been Done:
ODOT roadside vegetation managers have been trained to successfully complete PAC exams and have been provided continuing training to maintain PAC and ECC status. Additionally, they have been training and counseled on weed identification, spray equipment selection, equipment trouble-shooting/calibration, herbicide selection and use, as well as identification of environmentally sensitive areas. ODOT herbicide bid specifications have been reviewed for proper technical content by OSU employees. Vegetation establishment and vegetation management reference manuals were developed and distributed to ODOT field staff and are updated yearly with the most current weed control suggestions. Roadside equipment inventory status and herbicide use surveys have been conducted yearly to track trends.

Impact:
One-hundred and two people received pesticide applicator certification training in 2002 with 560 pesticide applicators receiving continuing education in 14 workshops in 8 locations across Oklahoma in 2002. Roadside acreage in Oklahoma treated with atrazine, a Restricted Use pesticide, has been reduced from 35,936 acres in 1997 to 12,721 acres in 2002 (65% reduction). Total roadside acreage treated with herbicides has declined from 100,817 acres in 1999 to 86,837 acres in 2002 (14% reduction). Training directly resulted in ODOT atrazine use being gradually replaced with a General Use classified glyphosate + 2,4-D tank mix. This treatment poses less environmental risk. Improved weed control also resulted, and in some instances an additional mowing was eliminated that would have cost approximately $14+ per acre. During the bid process, we provided industry sales representatives and ODOT buyers with cost-benefit analysis information regarding generic herbicide products. This resulted in an additional bid-price reduction for herbicides that saved ODOT an estimated $50,000 in 2002. ODOT purchased 3 precision-agriculture sprayers (PAS) since 2000 as a direct result of an "on-loan" PAS demo conducted by OSU roadside program personnel. These PAS allow for less herbicide use in vegetation encroachment control on asphalt shoulders. We developed "no spray zones" on maps for ODOT where pesticide applicators no longer treat so as to protect surface water resources. Clear zones on the roadsides now contain healthier turf, which provides better pavement and shoulder stability. With fewer tall weeds comes improved visibility and thus safety for the motorist. The PAC and ECC training programs result in better performing ODOT employees and a measurable performance parameter that allows ODOT field workers opportunities for salary improvements due to increased knowledge and skills gained.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific; Integrated Research and Extension

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Title: Ecology, Biology, and Pest Management of Wood-Destroying Subterranean Termites

Issue:
Subterranean termites are extremely destructive pests of wooden structures throughout Oklahoma, the United States, and the World. In the US, building owners spend $1.5 billion or more a year for termite control treatments and damage repair. To manage termites effectively and protect millions of wooden structures from their damage, increased knowledge of their biology and life habits is needed. Additionally, new termite management technologies need to be evaluated for effectiveness. State extension agents, termite management professionals, homeowners, and business owners of wooden structures have a need for new information on methodologies and technologies that protect wooden structures from subterranean termites.

What Has Been Done:
Field studies have been initiated to elucidate subterranean termite foraging territories, feeding behavior, taxonomy, distribution, and life habits. These studies are national and international. Additional field studies initiated evaluate new technologies to include low environmental impact termite baits, non-repellent termiticides, long-term fate of termiticides in soil, and physical barriers. Training for pest management professionals has been conducted at the Pinkston Education Facility for Structural Urban Pests, providing certification training for 86 pesticide applicators. More than 2,300 pest control industry professionals, master gardeners, and private citizens have received training at 19 conferences and workshops.

Impact:
Field studies have led to and will continue to provide increased knowledge and better understanding of termite social behavior, as well as efficacy of emerging technologies that can be applied to termite control strategies and tactics. Termite distribution across Oklahoma has been delineated, providing information to pest control professionals, industry, and homeowners as to which species are encountered in their area. Conferences and workshops have led to businesses expanding their workforce to accommodate the increased use of baits and physical barriers in lieu of termiticides applied to soils, which also reduces risk of environmental contamination from pesticides. The integrated pest management training and teaching approach

in these gatherings has led to increased understanding of sanitation practices around structures, building construction practices, and improved monitoring and inspection of wooden buildings to reduce or eliminate conditions that are conducive to termite infestation. This has led to reduced cost to building owners relative to termite control by correcting conducive conditions and thus reducing the costs that would be incurred by pesticide use. Training provided at the Pinkston Education Facility is a required part of the certification requirements in Oklahoma. Certified applicators then train their subordinates, expanding the impact of the training received at OSU.

Scope of Impact: Multi-State, National, and International**;** Integrated Research and Extension

Funding Sources: State; Smith-Lever

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Key Theme – Sustainable Agriculture

Title: Integrating Pasture Management and Herd Size Strategies

Issue:
The 2001 Range and Pasture survey conducted by the OSU Cooperative Extension Service suggested the misuse of common forage management practices, such as fertilization and stocking rate by forage and livestock producers. Additional information highlighted that many current forage/livestock producers are part-time producers with goals and expectations that may not be completely profit motivated. There appears to be some decline in pasture productivity, especially among some producers, who oftentimes substitute proper management with purchased inputs. This survey also indicated a heavy dependence on feeding hay during the winter. A small percentage of producers feed hay less than 30 days and less than 10% feed hay fewer than 60 days. Seventy seven percent indicated that feeding hay for longer than 60 days was common and 34% fed hay longer than 120 days.

What Has Been Done:
An integrated pasture management demonstration project was developed to illustrate the effects of fall fertilization on production of tall fescue for winter grazing, proper fertility management for legume persistence, and proper grazing management. Proper stocking rates and proper pasture management are an integral part of this project. This is because these two factors have a pronounced influence on the profitability of the forage-livestock enterprise. Almost 75% of 183 acres have been managed in a sustainable pasture system since 1988. The concepts promoted by this whole-farm demonstration project are that

- Proper soil fertility is critical to maintaining sustainable pasture productivity.
- Soil pH, phosphorus, and potassium can be improved and maintained over time
- Application of N fertilizer with deferred grazing permits utilization of stockpiled forages in late fall and early winter to minimize hay feeding.
- Use of legumes maintains pasture productivity without high N rates.

Impact:
This whole-farm demonstration project promotes the viewpoint that small- to medium-sized forage/livestock operations can be managed as an integrated resource rather than a cattle operation. Due to the amount of time and expense involved in feeding hay, areas of greatest potential impact appear to be efforts that reduce the reliance on harvested forage for winter-feeding programs. Modest savings of $0.50 per head per day could result in additional income of $1500 to $2000 for a 50-cow beef herd by decreasing the length of the hay-feeding season from 120 days to 60 days.

Scope of Impact: Regional, Multi-State

Funding Sources: State; Smith-Lever; grant

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Key Theme: Water Quality

Title: **The Use of an Enid, Oklahoma Housing Addition for Managing Environmentally-Sensitive Landscapes: A Model System**

Issue:
Contamination of surface water from pesticides and fertilizers in several Oklahoma cities has been well documented. A recent telephone survey conducted in Oklahoma City and Tulsa revealed that 75.8% of consumers apply their own pesticides, yet revealed an overall lack of knowledge in pest identification, pest management, proper pesticide use, pesticide alternatives, plants adapted for the Oklahoma landscape, soil and nutrient management, and pesticide disposal. Consequently, innovative educational programming is needed to address these deficits.

What Has Been Done:
Working with Ron Robinson, Garfield County Extension Director, a multi-disciplinary team (including an Extension specialist from Langston University) developed a pilot program for residents of a 100-household neighborhood in Enid, which is built around two man-made lakes.

The overall project was on protecting water quality through pesticide and fertilizer reduction, with an emphasis on the use of relatively pest resistant woody plant materials adapted to western Oklahoma. A total of 19 trees and 26 shrubs were professionally installed into two homeowners' yards, to serve as demonstrations of these varieties. Weather-resistant labels were attached to the new plantings, so that neighborhood residents could view and replicate these ornamentals in their own yards. A lecture series was delivered over a 3-week period, including water quality, eco-sensitive pest management of insect, disease, and weed pests, proper turf grass maintenance, and proper selection, placement, and maintenance of woody ornamentals. Approximately 25 neighborhood residents attended each lecture. A subsequent field day was held for the entire city of Enid, reproducing many of the same lectures and including a tour of the neighborhood, focusing on the demonstration yards.

Impact:
The demonstration yards, lecture series, and field day were well received by the participants. Extensive printed material was provided at each lecture to serve as continuing reference. Neighborhood tours during the lectures and the field day provided the attendees with on-the-spot diagnosis of problem plants, problem plant placement, and problem pests. Several residents received individualized assistance with landscape plantings, maintenance, and pest identification. Local county Master Gardeners attended every session, thus bolstering their knowledge base and confidence when educating Enid residents (population 45,000). Two homeowners commented, "We learned a great deal about our lake and landscaping. It would have been great to have been able to attend seminars like these before we started our landscaping," and "The seminars showed us that if you do proper landscaping, you don't need to use pesticides all the time. There were some great handouts." Several homeowners visited the demonstration yards during the past 2 summers; comments included "impressive" and "good ideas for my yard." One homeowner even commented that because of the lecture and demonstration on turfgrass, they will switch from a high-maintenance, high-input grass to one adapted for their region and thus will require fewer chemical inputs.

Two follow-up surveys of the neighborhood residents were conducted, and one survey of the field day attendees. The first one was mailed to the residents and the field day attendees (with postage-paid envelope for return mail), and the second conducted by the Garfield County Master Gardeners going door to door. The findings from these surveys reflected those from the larger survey in Oklahoma City and Tulsa, with the homeowners demonstrating a concern about the impact of pesticides and fertilizers on the environment and on human health, yet an overall lack of knowledge in pest management, pesticide safety and proper disposal, reliance on organophosphate insecticides, plants adapted for the Oklahoma landscape, and soil and nutrient management. Many people had visited the demonstration yards, with several stating they had used these ideas for their own yards. In addition, we were pleased to see that 56% now choose locally adapted cultivars for their landscapes.

The success of this pilot project has already spun off new statewide projects. Based on feedback from this project, we are developing a CD-ROM that includes extensive information on ornamental and turf grass selection, maintenance, and pest management, with area-specific plant selections highlighted. We will conduct similar workshops in each of the four quadrants of the state over the next two years, with a greater emphasis on train-the-trainer opportunities. This

project received greater attention when the project team was awarded First Place, Educational Institutions award for Education and Promotion 2002, Keep Oklahoma Beautiful.

Scope of Impact: State specific

Funding Sources: State; Smith-Lever

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Title: Poultry Waste Management Education

Issue:
The Oklahoma Cooperative Extension Service and Oklahoma State University were asked in February 1998 to develop and deliver Poultry Waste Management Education in response to the Oklahoma Registered Poultry Feeding Operations Act. The new law came about in an effort to manage phosphorus and other nutrients affecting the waters of the state. This education is an effort to reduce the potential of water pollution arising from the poultry industry in eastern Oklahoma.

What Has Been Done:
We provide nine hours of initial waste management training and three hours of annual update training thereafter for Oklahoma poultry producers and poultry litter applicators. 1,395 people received certificates for completing the first nine hours. We have offered 360.5 hours of continuing education to date. Several continuing education events have been planned in cooperation with agencies such as NRCS and ODA.

In August 2001, we finished a video series to cover the initial nine hours of training. The series is broken down into nine modules, which are similar to the live initial training sessions facilitated by county educators. A workbook and hand out series are provided for each module. With the video series we are able to better accommodate small groups or individuals, and provide county educators more flexibility in presentation. Video based training will be more accessible to future poultry farm operators and litter applicators, and will also make it easier to share our program

with other states. In the coming year we will make adjustments to the curricula to provide more specific training for poultry applicators.

Impact:
More than 1,300 poultry producers have completed the initial training between July 1998 and July 2002. The OSU poultry waste management program has had many courses related to soil testing and how it will help better manage soil if the proper amount of litter is used. We have had a tremendous amount of response to these courses. According to data collected from the Soil, Water & Forage Analytical Laboratory at OSU, soil samples received from poultry producing counties in 1997 averaged 166 soil samples per county. In 2002 we increased to an average of 283 soil samples per county. In addition we received the following comments from poultry producers:

"The OSU poultry education program has provided me with a better understanding of how to properly apply my poultry litter, and the results that can occur if applied incorrectly. Soil testing education during the poultry education program has taught me to better utilize my litter and improve forage production."

Dan Mackey, Spiro Poultry Producer

"I have especially enjoyed the composter workshops. They have taught me how to utilize my composter and to properly put the right amount of materials in for it to work properly. It also helped give a better understanding of the correct way to spread litter on land and how the phosphorus, nitrogen and potassium helped build my soil."

Diane Longshore, Stilwell Poultry Producer

Scope of Impact: State Specific

Funding Sources: Grant; State; Smith-Lever

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Title: **Environmental Education and Pollution Prevention in Under-served Oklahoma Communities**

Issue:
Small rural communities in Eastern Oklahoma, composed mostly of minority population with low economic status had not established community based pollution prevention strategies to protect their drinking water. Through education, research, and technical assistance provided by

this project, these communities have addressed many of their own environmental risks to preserve and restore water quality in their community.

What Has Been Done:
The objective of this project was to educate citizens in under served communities to protect their drinking water, specifically:

- Enhance community understanding of environmental water quality issues, particularly drinking water and water pollution.
- Identify necessary improvements in communication and coordination among existing community-based organizations and local, state, and federal environmental programs.

A committee including the Natural Resource Conservation Service (NRCS), Retired Educators for Agricultural Programs (REAP), Oklahoma Department of Environmental Quality (ODEQ), Oklahoma State University Cooperative Extension and citizens was formed to identify targets and coordinate among county, state, and federal programs, agencies, and organizations in Creek and Okfuskee Counties.

The Oklahoma Landowners and Tenants Association (TOLTA) partnered with OSU Cooperative Extension to sponsor training and provide equipment for REAP students to conduct Home*A*Syst assessments. In the process the students collected data utilizing Global Positioning System (GPS) units, and digital cameras and entered the data into a GIS for spatial analysis.

Impact:
Students and volunteers in the program identified 26 percent of all wells as having coliform bacterial contamination.

Input and participation from the committee representatives generated synergy for the pollution prevention program. Because both TOLTA members and REAP students are from the under served communities, community involvement was much enhanced. This improved the community's understanding of environmental water quality issues and particularly their knowledge of drinking water concerns. The program also identified citizen volunteers to participate in environmental monitoring through the Blue Thumb program.

The Environmental Justice Water Quality project with TOLTA and OSU is one of the most talked about items in the under served communities of Creek and Okfuskee counties. It has increased the awareness of water quality and improved the care of wells and septic systems, and the REAP students learned first-hand about environmental issues.

Funding Source: Environmental Protection Agency; State; and private grant

Scope of Impact: Multi-state with Southern Region.

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CSREES Goal 5: Enhanced economic opportunity and quality of life for Americans.

Overview

Oklahoma key program components contributing to this goal include: community economic, small business and tourism development; community infrastructure, service and facilities; local government education; applications engineers; family economic well-being; family resiliency; parenting; leadership development (youth and adult); life skill development; and club organizational development. The theme categories in this goal represent several programs that should have been included in CSREES goal 1, such as, "Agricultural Financial Management". Thus some reporting discontinuities may exist between what is reported in the overview and under key themes. During the year, 18,727 demonstrations, meetings and conferences (including 11,850 for 4-H and youth programs) were conducted under this goal. OCES personnel conducted an additional, 68,657 visits and consultations (over 20,000 with non-youth audiences). These activities were attended by 872,956 participants during the year (including 605,381 participants attending youth activities). Approximately 22% of the attendees of programs under this goal represented non-white audiences. For the youth programs, this number was 23.5%. These figures might be compared to 25% in the general population of Oklahoma. Several programs contributing to this goal train and use large contingents of volunteers. Volunteers contributed over 22,870 days during the year to support and help deliver programs under this goal. Programs in this goal also have a very large number of person-contacts through mass media, such as television, radio and newspapers. Over 27 million person-contacts occurred through mass media educational programming under this goal in 2002.

Educational and service programming under this goal really fall into four major areas. The first is the area related to community development, local leadership development, infrastructure, government and economic development. These all represent rapidly growing areas of OCES requests and effort. Particularly high demand has been experienced in rural medical service, economic development, and through the applications engineers program. The latter is a joint program with the College of Engineering. It places masters-level engineers strategically around the state through Cooperative Extension offices. These applications engineers work with small to mid-sized manufacturing companies in rural communities to solve production, expansion and efficiency questions. This program and the rural community health services programs have been significant shifts in emphasis over the last five years. And these programs continue to grow. The other three major program areas under this goal are very high contact programs. Particularly high contacts are the consumer horticulture, home gardening efforts and the youth leadership and life skills programs. These programs result in a huge number of direct contacts every year - both in urban and non-urban communities. In order to better meet demand, OCES conducts a large Master Gardener program as well as a weekly "Oklahoma Gardening" television show. Also, the

youth life skill development and leadership programs and Master Gardener program develop most of the large volunteer effort mentioned above.

During the year, the Applications Engineers served more than 170, mostly rural, manufacturers that employ more than 8,400 citizens. The engineering assistance in the client projects resulted in over $3.1 million of increased sales for these firms and another $5.2 million of which would have been lost to the local economy due to relocation. In addition, the applications engineering program documented 149 new jobs created from assistance and 103 jobs retained. Programs related to agricultural business management remained strong. The Federal and State Taxation Education program provided sixteen hours of continuing professional education for 2,250 CPAs, attorneys, and tax professionals. These individuals prepare 93% of the farm tax returns filed by Oklahomans. In addition, it trained 110 IRS and Oklahoma Tax Commission employees. The Intensive Financial Management and Planning Support (IFMAPS) program has worked with more than 1,600 farm families since 1996. As part of the financial planning and management efforts, IFMAPS helps producers complete farm plans mandatory to their participating in the Oklahoma Agricultural Linked Deposit Program. In 2001-2002, IFMAPS worked with 118 farm families who received an average loan of $299,000 and saved an average of $8,205 in interest per year. That amounts to an interest savings for the 118 producers of approximately $2.8 million over three years. In 2002, OCES teamed with the State Auditor and Inspector to provide training for county excise boards. One outcome was in Tulsa County, the training resulted in a $1 million savings to the Tulsa County Public Schools. Two relatively new programs are rapidly growing. Oklahoma AgrAbility Project began by making a media and trade show blitz and has already provided a variety of resources to assist over 200 individuals. The Citizens Engagement through Public Deliberation program in its second full year trained and assisted over 150 citizens convene and conduct deliberative public forums. A study done jointly with the University of Missouri shows that following the public forums, 42% indicated they organized a community taskforce or study group, 62% contacted office holders from their community, 83% helped get stories on the issue in the local media, and 52% of the participants began to network with others interested in the issue.

Family resiliency programs continued strong efforts in character education and life skills development for youth and young adults. In the Character Critters program, 80% of the parents of participating young children indicated an improvement in their child's behavior and 95% of the teachers surveyed saw an improvement in behavior. Family resiliency programming also provided literacy through Reading Renaissance. For example, in one county an 80% of the participants showed an increase in reading ability based on pre and post testing using the Slosson Oral Reading Test.

The 4-H Youth programs continue to serve and educate an enormous number of youth contacts. Over one hundred different club and after-school programs are available across the state. Listed below under the Key Theme Youth Development/4-H are just a few examples including: natural resources education, service learning, forestry and wildlife, literacy, youth entrepreneurship, and integrated pest management.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Total expenditures represented

by programming and related support for this goal are approximately $22.7 million with $3.9 million from Smith Lever funds. About 288 professional and paraprofessional FTEs contributed to the goal last year. Following are some example program impact statements arranged by CSREES Key Theme.

Key Theme – Agricultural Financial Management

Title: Federal & State Taxation Education

Issue:
Federal and state taxation impacts every individual's business and personal decisions. Agra-business owners, agricultural producers, and employees success in achieving business and personal goals is in part dependent on an understanding of how taxes effect disposable income. Taxes include: income, sales, ad valorum, self-employment, social security, as well as estate and gift tax. For many individuals, more than one-half of net income is consumed by taxes. Specifically, individuals want to pay the minimum legal amount of tax or maximize the benefits paid to them. However, an individual's objective to pay the least tax may be constrained by or in conflict with personal preferences that can be more important to the individual than tax savings.

What Has Been Done:
The Farm & Business Tax Institutes are a series of eleven (11) 2-day income tax update seminars and is truly a team effort. Sixteen hours (16) of continuing professional education are provided to more than 2,250 CPA's, Attorneys, and tax professionals. An additional seminar was presented to 110 IRS and Oklahoma Tax Commission employees.

For more than 25 years, the Farm Income Tax Book coordinated by the University of Illinois has been used as the primary text for the fall Farm & Business Tax Institutes. The institute is attended in Oklahoma by more than 2200 tax professionals and nation-wide approximately 40,000 tax professionals utilize this material every year. After the death of Allen Bock, the lead author of the Farm Income Tax Book at the University of Illinois, the University of Illinois invited a group of tax school directors from several states to decide how the cooperative effort of the states should be administered. Revenue from book sales was used to hire a meeting facilitator. The participants agreed the best course of action was to create a non-profit corporation to develop the educational material all of us need in our educational programs. As a result the Land Grant University Tax Educational Foundation, (LGUTEF) was formed and received tax exempt status in April 2002.

This non-profit corporation will coordinate the (1) writing and production of the Income Tax Workbook, (2) the National Farm Income Tax Extension Committee which cooperates with IRS to produce the Farmer's Tax Guide, and (3) provide a website for internal use by tax education programs of member universities. The corporation will provide a method for users of the Farm Income Tax Workbook and other Committee members doing tax education work to (1) coordinate tax educational activities and (2) jointly create and share teaching materials that will be beneficial to all members, and (3) organize a procedure for providing input in the development of the policies, procedures, materials and costs incurred in delivery of tax

educational programs. The teamwork involved in this project extends to national levels as well as state and local cooperation. The National Extension Advisory Committee on federal taxation cooperates with IRS and USDA in Washington D.C. and helps write the IRS Publication 225, Farmer's tax guide. The committee meets with and briefs the Congressional Joint Committee on Taxation on Agricultural taxation problems and issues.

County and Area producer tax programs conducted by Area Specialists answer questions and solve individual problems for Producers, Extension personal, College of Agriculture faculty and staff, and tax preparers. Sunup TV programs, Agri-talk national Ag Radio programs, presentations and training for Tax preparer associations, producer organizations, Vo-tech Farm Business advisors, and Young Farmer groups present timely new law changes and answer specific questions. Timely articles for Ag publications and the Farmer's Stockman Outlook Article, and OSU fact sheets and current reports make taxpayers and preparers aware of the numerous tax law changes that affect their bottom line.

Impact:
Evaluation statistics indicate that participants in this program file more than 93% of Oklahoma farm tax returns. For more than 30% of the participants, this is the only educational seminar they attend and their only source of tax preparation materials for the coming year. On a national basis, the Institute materials are taught in 40 states. More than 38,000 tax professionals attend these seminars nationally, and prepare approximately 800,000 farm tax returns and 4.8 million total tax returns in the United States. The National Extension Advisory Committee on federal taxation cooperates with IRS and USDA in Washington D.C. to write the IRS Publication 225, Farmer's Tax Guide. This publication is distributed to more than 10,000 individual farmers and tax preparers in Oklahoma each year. Nationwide, more than 300,000 Farmer's tax guides are distributed each year.

Scope of Impact: State; National; OK and MO cooperate to provide seminars to Missouri.

Funding Sources: Fees; State; Smith-Lever

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Title: Oklahoma Cooperative Extension's IFMAPS Program Gives Farmers and Ranchers Management/Planning Support

Issue:
Making good financial management decisions is a constant challenge for Oklahoma farmers and ranchers. Financial pressures can make farmers and ranchers feel at times as if they have no

place to turn. But in Oklahoma, there is help through the Intensive Financial Management and Planning Support (IFMAPS) program, sponsored by the Oklahoma Cooperative Extension Service. When producers are ready to study their personal situation critically, they can get individual and confidential help.

What Has Been Done:
The IFMAPS program was designed to provide producers with comprehensive materials and assistance plus help them prepare financial statements, farm budgets, and marketing plans. Procedures used by IFMAPS include one-on-one assistance, workshops, cooperative efforts with non-extension agencies and groups, financial management training, resource materials, computer software, and referrals.

Area Extension Agricultural Economic Specialists plus part-time IFMAPS specialists provide one-on-one assistance in financial management and planning throughout the state. Producers call the local extension office, the IFMAPS toll-free number (1-800-522-3755), Area Specialists or IFMAPS specialists to request assistance. Agricultural lenders, attorneys, clergy, and Extension staff make referrals.

IFMAPS staff assist farm families in developing and analyzing alternative farm financial plans. Alternatives may include asset restructuring, new or different farm enterprises, adding to or reducing the size of existing enterprises, improving resource use, increasing income from off-farm work, developing more efficient management techniques, debt restructuring, liquidating the farm partially or completely.

Impacts:
In fiscal year 2002, 94 farm families received individual financial analysis assistance; from FY 96-02, more than 1,600 farm families received the service.

Farm families that receive individual assistance are better able to organize their financial information, evaluate this information, and make informed decisions about their operations. These skills benefit farmers and ranchers in two ways: 1) they improve management skills, which lead to improved business operations; 2) they encourage the operators to continue learning more about farm financial management.

IFMAPS staff also help families identify other resources available to help solve production and marketing problems and answer legal and tax questions. IFMAPS personnel help farm families prepare farm plans to apply for Farm Service Agency guaranteed loans or to prepare for restructuring loans. IFMAPS helps inform young and beginning farmers about Oklahoma and FSA beginning farmer loan programs through publications, meetings and individual contacts. IFMAPS staff also assist with Quicken® workshops which show farmers and ranchers how to use this software to keep more accurate farm financial records.

IFMAPS staff help producers develop the plans needed to qualify for the Oklahoma Agricultural Linked Deposit Program (OALDP). The number of farm plans developed by IFMAPS staff for producers to qualify for this program and the estimated savings in interest expenses to the producers is:

	FY 2002	FY 2001
First-time Applicants	30	78
Estimated average loan size	$315,200	$292,616

Estimated interest savings per loan (2.7 %) per year = $8,205
Estimated Total interest savings per year = $443,070

Funding Sources: State

Scope of Impact: State Specific

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Key Theme – Character/Ethics Education

Title: Family Resiliency – Character Counts

Issue:
The commitment of adults to be models of good character and spend time with young people can make a difference and can improve the morally deadening paranoia fostered by our current culture. Young people yearn for consistent adult involvement, and when they get it, according to surveys and plain common sense, they are less inclined to sexual activity, drug and alcohol use, suicide attempts, vandalism, violence and other problems [Michigan State University poll of 13,000 adolescents in early 1995]. Adults, in turn, need support from society's institutions.

What Has Been Done:
Exercising Character is a program adopted by the Oklahoma Cooperative Extension Service as the primary character education curriculum for children ages 6 through teens. The curriculum from CHARACTER COUNTS!sm, focuses on six pillar words: *trustworthiness, respect , responsibility, fairness, caring, and citizenship*. Exercising Character helps children, their teachers and families introduce these traits through teacher or peer led activities and lessons. In 2003, the county Educators are expanding the Character Education offerings for this age group by introducing a livestock ethics program called, SHOWING CHARACTER.

Impact:
Previous efforts had focused on younger children involved in a program called Character Critters. Extension Educators had an option of expanding their programming to include school-aged children in the 2002 program year. Based upon evaluation reports of teachers who have used the program, seventy-five percent saw “improved behaviors” regarding such areas as:

following the rules, helping each other, showing respect for adults, telling the truth, showing kindness, sharing, and being helpful to others.

A sample of fifteen teachers, who participated in the Exercising Character survey along with their 352 students, reported that on average, 75% of the students had improved positive behaviors after participating in the program. The students themselves reported their behavior as being "better" 74% of the time after participating in the character education instruction. Furthermore, forty-eight percent of the students indicated that they had talked about the activities with their parents.

Scope of Impact: State Specific

Funding Sources: State; Smith-Lever

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Title: Family Resiliency – Character Critters

Issue:
In Oklahoma, there were 11,224 confirmed cases of child neglect cases FY 2000. This neglect of children's needs, especially the need for character education, can be attributed to the erosion of family support systems caused by economic, mobility, isolation; television replacing family time; addiction; children guided by peers; discipline for control rather than self-discipline. Since 1950, a 14-year-old's vocabulary has declined from 23,000 to 10,000 words. School counselors find children do not understand words like respect and responsibility.

What Has Been Done:
Character Critters is an extension program based on the CHARACTER COUNTS!^{sm} six pillar words: trustworthiness, respect, responsibility, fairness caring, and citizenship. Six lessons help preschool children, their parents, teachers and families introduce these words through animal stories, learning experiences in classroom interest centers, parent events, and take home activities. The success of this program depends upon partnerships with business, government, law enforcement, media churches, sports, and youth programs.

In FY 2001 extension's goal was to measure the impact of the program on children, parents and families when extension educators taught the lessons.

In FY 2002 extension's goal was to expand the Character Critters Program through teacher in-service taught by extension educators and see if the impact was similar.

Impact:
Increased parent, family, school, and community involvement in character education.

FY 2001: With 14 counties reporting, the program has involved 2,170 children, 1,016 parents, and 153 teachers.
FY 2002: With 38 counties reporting, the program has involved 7,360 children and 1,199 teachers.
Preschool children's understanding of the six pillars of character will be reflected in their behavior.
FY 2001: With 57% (26/45) of the Family Resiliency Impact Team counties reporting:

- Parents gave very high 85-95% ratings to the parent meetings saying they would practice the six pillars of character themselves, talk to and spend time with their child, choosing activities that would help the child's development. 80% of the parents reported positive changes in their child's behavior with the greatest gains in caring. Very close to 100% of the parents felt their children gained understanding of the 6 pillar words of character.
- Teachers surveyed said the program helped them to practice the six pillars themselves and to teach the concepts to the children. 80% saw moderate to much use of the pillar words by the children. 95% saw positive changes in the children's behavior and 50% noted a decrease in hitting. All of the teachers reported a change in their own behavior.

FY 2002**:** With 63% (21/33) of the Family Resiliency Impact Team counties offering Character Critters reporting data from 80 teachers:

- Very close to 100% of the teachers noticed an improvement in the children's behavior in the areas related to the Character Critters content. 80% reported that the children were using the common language of the six pillar words. Importantly, 81% of the teachers said they changed their behavior as a result of teaching the program. Indeed, the results of the extended program were comparable, but reached 331% more children.
- Almost 50% (36/80) teachers used the Character Critters program to support the school's character education program, most frequently (18/36) Great Expectations.
- Heavy parent involvement continued with use of the take home activities (36) and W.A.R.M. Newsletters (21) mentioned by the most teachers. Other methods were parent meetings (8) and bulletin boards (7).

- A Head Start parent wrote, "These lessons have made it easier to teach character to my children because you are not just giving them a definition, but stories and activities they can understand. Too many kids are not taught any character, values, or morals these days."
- A special education teacher saw the repetitiveness of the program as an excellent way to help children living with mental retardation to become better citizens.
- The children remind each other about being "responsible" and "fair."
- Parents commented on how well their children remember the names of the characters and what they taught.
- I am planning to start at the beginning of the year next year so we will have more time on each critter.

- The activities sent home helped parents spend quality time with their children!
- It increased the time parents spent with children, and let them better understand what is being taught in our class.

Scope of Impact: State Specific

Funding Sources: State; Smith-Lever

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Key Theme – Children, Youth and Families

Title: Family Resiliency, Strengthening Life Skills

Issue:
Every three hours in Oklahoma a child gives birth to a child. Tillman County ranked number one in the state of Oklahoma in teen pregnancy six years ago. The child carrying the child is less likely to get prenatal care and is more likely to have a baby with development or health difficulties. A teen mother is less likely to finish her education. Employment prospects diminish. More than half of child abuse and neglect confirmed in Oklahoma occurs to children whose mothers gave birth to a child before age 20. Oklahoma information shows that two-thirds of teen pregnancies are not a decision at all, they were unintended.

What Has Been Done:
Tillman County Extension has joined forces with other community citizens and organizations to from a community partnership that works on youth issues and especially teen pregnancy. All schools in the county have been involved in activities for targeted students. Pre-school and kindergarten children in two schools have learned about the six pillars of character through a story, puppet, and take home activities. Sixth grade students in all schools have had a five-day program about life education (physical and mental changes in their bodies). All seventh grade classes have had the program "Postponing Sexual Involvement" (PSI) which uses trained high school students to present five programs about teen relationships. All eight grade students attend a one day event that includes discussion about sexually transmitted diseases, self-esteem, careers, relationships, bullying, and drug abuse to name a few of the topics. The partnership also works with each school to provide a "favor" for the prom, the candy has a message attached that encourages positive and responsible actions on prom night.

Impact:
Tillman County has dropped to eight in Oklahoma in teen pregnancy. Tillman County is still above the state average in teen births, but still has dropped from one to eight in approximately six years. The community partnership has worked to progressively add programs to positively influence youth, starting with pre-school, going to middle school and then high school. The majority of programming is spent with middle school youth, since that is when relationships with the opposite sex begin to be more serious. Evaluation of the PSI program and the Eight Grade Health Fair show positive remarks from the students, 98% said they would be more responsible for their actions and 30% responded with a remark that they would wait to have sex until they were older, or married, and they wanted to stay in school and go on to a higher form of education.

Scope of Impact: State Specific

Funding Sources: County; State; Smith-Lever
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Key Theme – Community Development

Title: County Excise Board Workshops

Issue:
Oversight of every local government budget is performed by an appointed citizen board responsible for legal, sufficient, and non-excessive use of taxpayer dollars. This board can wield considerable power yet typically has limited knowledge of local government finance and little knowledge of the intricate laws, accounting, and particulars of financing city, school, county, and other local government bodies. Educational programs are essential for these boards to perform their function. A workshop in 2001 ultimately led to saving Tulsa County schools and other local governments $1.6 million in fiscal year 2002-2003.

What Has Been Done:
We have partnered with the State Auditor and Inspector (SA&I) to provide training workshops to county excise boards. Training workshops are provided in odd numbered years and, by special request, in even numbered years. Three workshops per year were conducted in 1995, 1997, 1999, and 2001 at varying locations around the state. Attendance averaged about 60 per year. Workshops were also conducted in 1994, 2000, and 2002. In 2001, regular training was provided. Among those attending were members of the Tulsa County Excise Board. These Board members had many questions and concerns about the way certain funds were being handled in Tulsa County. Following the workshop, board members interacted with Greg Hodges

(SA&I) and Notie Lansford (OCES) on several occasions as they reviewed the budgets and county funds.

Impact:
In 2002, as the Tulsa County Excise Board reviewed the county government budget (for 2002-2003), the Board determined that the assessor's visual inspection budget was excessive. Under their authority, the Board slashed $1.6 million from that budget. Visual inspection budgets are jointly paid by all local governments that collect a property tax. Responsibility for funding the visual inspection budget is proportional to the amount of property tax levied by each unit of government. Public schools in Tulsa County are the recipients of approximately 60% of the property taxes, hence pay 60% of the visual inspection budget. Sixty percent of $1.6 million is almost $1,000,000. This is a significant savings for public schools and other local governments (such as career tech and county), especially at a time when state appropriations are being reduced.

The Tulsa County Excise Board's action was challenged in district court. In December 2002, the district court ruled that the Board's action was within its authority and the visual inspection program budget reduction was upheld. In summary, at least $1.6 million in savings to local governments, particularly public schools, was realized.

Funding Source: State; Fees.

Scope of Impact: State specific

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Key Theme – Family Resource Management

Title: High School Financial Planning Program

Issue:
Teens gain financial skills and confidence through participating in the High School Financial Planning Program.

What Has Been Done:
A goal of education is to help young people become employable citizens and to enhance well-being in their adult years, yet many students graduate without the skills to manage personal finances wisely. This is especially true considering current trends of rising personal bankruptcies, consumer credit delinquencies, and inadequate savings for emergencies and retirement among

adults. Results of a recent nationwide survey (Jump $tart Coalition for Personal Financial Literacy, 2002) reported teenagers are progressing into adulthood without the basic skills and knowledge it takes to make educated financial decisions. The study reported that, on average, the teens surveyed could only answer 50% of the questions correctly (on topics of credit use, budgeting, taxes, retirement, insurance, and inflation).

Since 1990, the Oklahoma Cooperative Extension Service, in partnership with the National Endowment for Financial Education, has educated high school students about basic money management and financial planning concepts. The county Extension educators assist the high school teachers in the implementation of the HSFPP. Oklahoma credit unions recently joined this educational effort. Approximately 38,000 Oklahoma youth have participated in the High School Financial Planning Program since 1990. Some 4,640 students in 87 schools participated in the HSFPP during calendar year 2002.

Impact:
A nationwide evaluation in 1997-1998 showed significant, positive change in personal financial knowledge, behavior, and confidence among high school students who studied the High School Financial Planning Program. As a result of high school students participating in the HSFPP, 86% of the students demonstrated an increase in financial knowledge or behavior when dealing with money. The area where students increased their knowledge the most was credit (47% reported an increase in credit knowledge).

The following changes by participants as a result of the HSFPP also were reported in the nationwide evaluation:

- 31% started saving;
- 15% began saving more;
- 35% improved skills for tracking spending;
- 49% improved their knowledge about investments;
- 39% reported believing that how they managed money would affect their future; and
- 42% felt more confident about managing their money

Scope of Impact: State Specific; National

Funding Sources: State; Smith-Lever

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Key Theme – Farm Safety

Title: Oklahoma AgrAbility Project

Issue:
Disabling injuries have a significant impact on the agricultural population. In a recent survey of Oklahoma farmers and ranchers, 26% of the respondents reported a disability. This translates to over 17,000 individuals who have a disability that limits their ability to perform certain work-related tasks as well as difficulties with tasks associated with daily living. To remain actively engaged in agricultural-related work, these rural families must overcome significant barriers – isolation from rehabilitation technology, lack of information by disabled individuals, excessive distance to travel to obtain adequate services, and lack of financial resources. To address these barriers, Oklahoma agricultural families affected by disabilities need to be aware of new services; learn about low-cost modifications to the farm, home, equipment, and work site operations; and obtain technical assistance to make appropriate modifications.

What Has Been Done:
A four-year AgrAbility grant from USDA-CSREES was secured by the partnership of Oklahoma Cooperative Extension Service, Langston University through the Center for Outreach Programs, and Oklahoma Assistive Technology Foundation with services provided through Oklahoma ABLE Tech. The mission of the Oklahoma AgrAbility Project is to provide education, assistance, and support to farmers, ranchers, and their families who have a disability or debilitating injury that limits their ability to perform essential farm tasks. Project awareness activities include: articles in the Sunday Oklahoman, Cowboy Journal, and various other media sources; booths at the Tulsa Farm Show and the Enid KNID Agrifest; presentations to various groups within extension; and a bi-monthly newsletter highlighting health and assistive technology issues.

Impact:
Over 7,000 individuals have been made aware of the program through trade shows and media sources. AgrAbility partners have attended over 40 public awareness events. Nearly 200 individuals, who have a variety of injuries and/or impairments, have been provided a variety of resources, including possible farm site modifications to make daily tasks easier and safer.

Funding Sources: USDA-CSREES, State, Smith-Lever

Scope of Impact: State specific

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Key Theme: Home-based Business Education

Title: Economic Development through Micro Businesses

Issue:
Enhancing the well being of individuals, families and communities through successful home-based and micro businesses. The number of people working at home grows annually by 5-10% (Link Resources, 1995). One reason for this growth is the economic situation (OCES, 1989, 1994, 1999). In Oklahoma, those economic reasons develop from our ranking of 43rd in individual per capita income and 36th in the number of people at or below poverty (2001 Statistical Abstract). Other reasons are: lifestyle changes, increased family time, being one's own boss, and entrepreneurship.

What Has Been Done:
In 1985, OCES recognized the growing trend of people working at home. Through the statewide network of Extension Educators OCES provides written materials that help a business owner get started and market their product or service. Educational programs provide owners with start-up and on-going operations support. For popular business ideas such as food-based businesses and childcare, specific materials are available. General workshops are provided on a wide variety of topics to introduce and encourage the concept of microentrepreneurship. Youth curriculums have been introduced to encourage youth to consider owning a business as one of their future options. One-on-one assistance is offered.

Impact:
· Over 24,000 home-based and micro businesses have been assisted.
· There are 125,000 home-based businesses in Oklahoma with an average income $24,374; totaling a $3 billion annual economic impact.
· Studies of the businesses worked with have shown that over 80% of home-based businesses contacting the program are still in business after four years. This compares favorably to Dun and Bradstreet's 1994 report that only 60% of small businesses survive that long.
· In a 1998/99 survey, 28% of respondents have started a business. With an average income, this means over $1,000,000 has been added to the local economy.
· Over 300 youth per year have received entrepreneurship training.

Funding: Smith-Lever; State

Scope of Impact: State Specific

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Key Theme – Jobs/Employment

Title: Applications Engineers Impact Statement

Issue:
The Oklahoma Department of Commerce Manufacturers database lists about 6,500 manufacturing firms in Oklahoma. Only 70 have more than 500 employees (1%). Another way of stating this, 99% have fewer than 500 employees, 93% employ fewer than 100 and 87% employ fewer than 50. Approximately half of these small firms are located in rural areas and are extremely important to their local economies. The loss or downsizing of even one of these wealth-generating small or mid-sized companies can have devastating consequences for the host and surrounding communities. While products are quite diversified, there is limited global perspective with respect to markets and technology. These rural firms face particular difficulty in getting relevant and usable information and technical assistance that will keep them abreast of the rapid changes in manufacturing technology.

What Has Been Done:
During FY 2002, the Applications Engineers, in cooperation with the Manufacturing Extension Agents of The Oklahoma Alliance for Manufacturing Excellence, served more than 170 small, mostly rural, manufacturers that employ more than 8,400 of our citizens. This effort included more than 7,000 hours of direct engineering assistance and technology transfer activities. Examples of engineering projects include assisting small manufacturers in implementing processes and procedures to comply with OSHA and EPA rules and regulations, process and product development, manufacturing facility layout and manufacturing cost analysis.

In addition, the Applications Engineers mentored several senior engineering class design project teams during the fiscal year. These senior design team projects allow the students to work with a small manufacturer on a real world problem, and at the same time, provide the manufacturer access to some of our best and brightest soon to graduate engineers at virtually no cost. These project activities provide a win-win situation for both students and manufacturers.

Impact
In order to receive engineering assistance the client must agree to a post project impact assessment. This impact assessment is done using procedures developed by the National Institute for Standards and Technology for the Manufacturing Extension Partnership. The client is contacted some months after the completion of an activity and is asked a series of questions designed to assess the impact of the effort.

The impact of this program is measured in several ways. One is the economic value of the service to the company as reported by the client. Another measure is the number of jobs created or retained. Both impacts are measured by an independent survey of the client. Number of jobs created or retained is translated into economic impact using an income multiplier to compute the direct, indirect, and induced effects due to a change in the number of jobs in the manufacturing sector.

The multiplier was developed from data collected from two different sources. First, the average salary for manufacturing in Oklahoma ($34,323) was taken from the U. S. Bureau of Labor Statistics published information for 2001. Secondly, the income multiplier of 2.2 was obtained from IMPLAN data for Oklahoma. The total economic impact can be computed by multiplying the average annual salary times the income multiplier to arrive at $75,511 for each new or retained job in the manufacturing sector.

In FY2002, the Applications Engineers client projects had the following impacts:

Sales increase	$3,125,000
Sales retained that would have otherwise been lost	$5,230,000
Cost savings	$2,544,000
Costs avoided	$1,069,000
149 new jobs created at $75,511.00 per job	$11,251,000
103 jobs retained at $75,511.00 per job	$7,778,000
6 jobs lost at $75,511.00 per job	-$453,000
Investment in new plant facilities and equipment	$6,195,000
Total impact	$36,739,000

Scope of Impact: State Specific; some regional impact

Funding Sources: Grant; State; Smith-Lever

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Key Theme – Leadership Training and Development

Title: Citizen Engagement through Public Deliberation (CEPD)

Issue:
Stories abound of angry, frustrated citizens who feel they have little power to influence important public decisions affecting their lives. This frustration is often characterized as apathy with little effort made to look deeper at the desire of regular people to express their views on public issues but believe they do not have a venue to do so.

Deliberative forums and study circles provide a safe, non-partisan venue for citizens to struggle with challenging public issues. These deliberations are based on the idea that in a democracy citizens have the responsibility to get together to talk through their common concerns, to weigh possible alternative actions to address these problems, and inform policy makers and other

community leaders about the desired direction for public action. Public deliberation provides a means by which citizens make choices about the basic purpose and direction for their communities and their country. As conveners, moderators, and recorders/reporters of deliberative forums, Extension professionals and other community leaders perform a non-biased, non-advocacy role in engaging citizens in building community.

What Has Been Done:
Founded by the faculty members listed below, the Oklahoma Partnership for Public Deliberation (OPPD) sustained operation throughout 2002, continuing its mission to foster participation in reasoned and informed decision making for the public good. The OPPD has conducted four Public Policy Institutes to prepare 150 Oklahomans to convene, moderate, record and report deliberative forums and study circles. This cadre of moderators and recorders are prepared and willing to give leadership to deliberative forums. To date, approximately 130 public forums have been conducted throughout the state on a wide range of topics. Currently three communities are implementing the following pilot projects: Carter County Speaks; Norman NIF Network; and Stillwater SPEAKS (Stillwater People Expressing Attitudes and Knowledge): *In Search of Common Ground*.

Impact:
Based on a joint study conducted by Oklahoma Cooperative Extension and Missouri Outreach and Extension, the following impacts are projected for Oklahoma:

- Public Policy Institute participants implement public deliberation in their communities by: facilitating local forums (46%), dealing with public issues (81%), and using public deliberation in work settings (74%), civic life (70%), and the religious community (58%).
- Forum participants report the following outcomes of forums:
    - Contact made with office holders (62%)
    - Community taskforce/study group was organized to address the issue (42%)
    - Stories about the issue were featured in the local media (83%)
    - Issue is now "on the table" in the community (38%)
    - Participants began to network with others on the issue (52%)
    - Additional forums were planned and conducted (59%)

It is concluded that individuals who participate in Public Policy Institutes use this leadership development experience to foster public deliberation in their communities and further, that citizen engagement is increased as a result of public forums.

Scope of Impact: Multi-state with Missouri

Funding Sources: State; Grant; Smith-Lever

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Title: Greer County Extension Leadership Project/Greer County's Initiative for the Future of Rural Oklahoma

Issue:
State Legislators, local citizens, and other decision makers have told the OCES that it is urgent that local citizens be trained in all aspects of leadership as it relates to community/economic development. Greer County is facing a shortage of effective leadership relating to it's own community/economic development. Greer County's governments are also facing burdens on caused by a tremendous decrease in population and tax revenues generated by that population.
Mangum and Granite Schools are in the business of educating our youth. The school's Valedictorians represent the best possible result of their efforts. Local investigations have shown that an extremely low number of graduating Valedictorians return to become productive citizen's of Greer County.

What Has Been Done:
The project began in March 2002 with the forming of the project committee. Twelve citizens representing civic organizations, city government, county government, and the Mangum and Greer County Chamber of Commerce volunteered to participate in a focused community/economic development planning and learning process.

In June the committee applied for a grant through the Oklahoma Cooperative Extension Service to develop a training program relevant to their needs. The OCES put together a committee to review the grant applications received and Greer County was awarded a leadership project grant.

A training program has been developed and initial phases of the training are complete. The training phase is scheduled to continue through the summer of 2003.

On August 24th Greer County passed a Hotel/Motel tax at a rate of 5% of which half was designated for tourism and economic development.

Impact:
Due to the formation of the committee opportunities have been seen for industrial economic diversification. There are specific opportunities being pursued in viniculture and whine making, dairy production, rock monument manufacturing, and trailer manufacturing. Without the formation of the project these opportunities would have been unrecognized.

The twelve member committee has begun their initial leadership training. Not only have members been invited to participate, but local elected officials and citizens have also participated.

Trainings attended have been; The Greer County Oklahoma Community Listening Session, The Oklahoma Governor's Conference on Tourism, The Oklahoma Cooperative Extension Service's

Super Retreat, and a OCES training session (Government Finance, Economic Development Authority, Responsibility, and Organization)

2003 Trainings will consist of; The Greer County Leadership Retreat (Stephen Covey's 7 Habits of Highly Effective People), OCES training (Community Economic Development 101, 102, and 103), The Greer County Oklahoma Community Focus Forum, Web Site Development, Grant Writing, OCES training (Oklahoma PRIDE Program), OCES training (Home Based Business and Entrepreneurship) and the OCES Resource Tour and Night Out.

Initial surveys of committee members evaluating their involvement in citizenship have been conducted. The Greer County Commissioner's have appointed a board, members of the committee, to oversee the expenditures for economic/tourism development.

Scope of Impact: County; Multi-County

Funding Sources: County; Private; State; Smith-Lever

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Title: Oklahoma Credential Cooperative Director Program

Issue:
The board of directors of an agricultural cooperative has responsibility for strategic decisions and for safeguarding the organizations assets. Agricultural cooperative board members are producers who are elected by the membership to serve with only token remuneration. In recent times, all board members, including cooperative board members are under intense scrutiny. The incidence of legal proceedings against board members has increased dramatically. These litigations are typically initiated by owner (member) groups and they focus on the competency and diligence of the board. The severe repercussions from errant business decisions and the intense scrutiny of board member competency have created a critical need for educational programs.

What Has Been Done:
In response to the critical need to improve the competencies of cooperative board members the Oklahoma Credential Cooperative Director (OCCD) program was created. The OCCD program involves two days of training on finance, legal responsibilities, parliamentary procedure, effective meeting management, strategic planning and other related topics. In designing the OCCD curriculum, board of director training material from across the U.S. was examined.

OCCD instructors include OCES faculty as well as industry experts including bankers, auditors, attorneys and consultants. The OCCD program is delivered simultaneously at a central location and via two-way interactive video at eight remote locations across Oklahoma.

The OCCD program was initiated in November of 2001 with the second session occurred in February of 2002. The first training segment was repeated in November 2002. Forty-nine cooperative board members representing 27 cooperative organizations have successfully completed the training and received OCCD certification. It is anticipated that approximately forty additional directors will complete the program in February 2003.

Impact:
The directors completing the OCCD program have a better understanding of financial management and the legal roles and responsibilities of the board of directors. The OCCD program has also helped to link cooperative directors to sources of outside assistance. Directors completing the OCCD program are able to make better business decisions and to safeguard the assets of their cooperative organizations. The existence of the OCCD program also encourages interested members to run for the board of directors and become involved in the management of their cooperatives.

Scope of Impact: Eighty-four cooperative organizations across the entire state of Oklahoma.

Funding Sources: State; Endowment; Smith-Lever

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Key Theme - Literacy

Title: Reading Renaissance

Issue:
Reading problems caught before age nine have a greater likelihood of being successfully improved and leave fewer emotional scars than those diagnosed later, according to current research. An estimated 40 percent of the nation's fourth graders cannot read at a basic level as measured by the most recent national test results.

What Has Been Done:
"Reading Renaissance" was designed to provide reading enrichment for at-risk third graders with reading deficiencies in the Altus school system for the past seven years. The third grade teachers

and librarians recommended students for the program. Parents had to sign permission forms for the students to participate. It would be offered seven months as a weekly two-hour program.

This program yearly has about half of the students from minorities. For example 22 of the 40 students this year are of the minority race. Volunteers and staff are also diversified races.

The teen volunteers have been from six youth organizations. Adult volunteers come from the three organizations and interested adults. The Altus School Transportation System buses the children to the central school. The Ministerial Alliance is also involved as the church vans and members provide transportation home. The Great Plains Literacy Council and Altus School Reading Resource Center conduct training for all the volunteers.

The "Reading Renaissance" project started September 1996 after the Extension Educator initiated a proposal to the National 4-H Council to develop youth leadership and literacy in Jackson County. A grant of $2,600 was awarded to start this after-school mentoring program.

The Extension Educator was involved in formatting the schedule, selecting the curriculum, recruiting volunteers, and promoting it from the conception of this unique program. This program has been a creative way to combine the Cooperative Extension Service with volunteers and agencies in literacy education and leadership with young children. A partnership with nine other community agencies and organizations has been successful in conducting the 27 weekly sessions every year.

Impact:
Since 1996 the Slosson Oral Reading Test (S.O.R.T.) was administered at the beginning and at the conclusion of the after-school 4-H program. In the spring of 2002, the post test showed an 80% increase in reading ability. An average of 55 books per student has been read during this program yearly.

Last year this after-school program linked over 75 teen tutors with the 44 children. There were over 50 volunteer hours contributed each week. If paid a tutoring fee of $10 per hour, this amounted to about $500 per week contributed by teen and adult volunteers or a total of $13,500 worth of in-kind service yearly.

The classroom teachers have reported that 50% of the children had developed an interest in recreational reading and 40% of the children had improved their school attendance.

Meetings occasionally were held with the parents to explain how to guide their children with school success and self-esteem. Because these parents have seen their children helped, there have been ten parents that come now for adult literacy class during the after-school program. This program started with 24 students the first year and has increased to over 40 every year since the first year. Since 1996, there have been a total of 288 at-risk students reached and who were all recruited as a 4-H member or as a 4-H Cloverbud. Twenty of these have become very active 4-H members after this program through the years.

Scope of Impact: State specific

Funding Sources: State; Grant; Smith-Lever

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Key Theme - Parenting

Program Title: Healthy Families

Issue:
In Oklahoma during fiscal year 2001, 13,394 allegations of child abuse and neglect were confirmed. Over 40% of the victims were not yet six years old. Thirty-eight children died due to abuse and neglect, over two-thirds of which did not live to their second birthday. During 2000, 2,612 babies were born to school-age teens and over one-quarter of children lived in single-headed families. More than 210,000 Oklahoma children live in poverty. The most active and significantly influenced brain development period is early childhood. Research over the last two decades indicates that home visiting and parent education and support services to parents around the time of a baby's birth reduces the risk of child abuse, and contributes to positive, healthy child rearing practices and family functioning. Such programs are shown to be more cost effective than providing treatment after problems occur.

What Has Been Done:
Healthy Families program goals are to assess family strengths and needs, enhance family functioning, promote positive parent-child interaction, and promote healthy childhood growth and development. Families may enroll prenatally until three months after their baby's birth, and may continue until the child is age five. Services are voluntary and include home visitation, center-based education and support, and referrals to health care providers and other community resources. Collaboration with other community agencies is emphasized to better utilize scarce resources and provide a comprehensive array of services to effectively meet families' needs.

In fiscal year 2002, Oklahoma Cooperative Extension Service (OCES) administered Healthy Families programs in five counties: Canadian, Delaware, Muskogee, Pottawatomie, and Texas. Through the year, 3,089 home visits were provided to 194 families with 255 children. Also, 178 parent education and support group sessions were provided to 205 parents.

Impact:
Participant surveys indicate a high level of satisfaction with the helpfulness, service quality, and increased knowledge received. Previous research conducted on the OCES Parent Education/Home Visitation programs suggests that first-time parents made significant increases

in parenting knowledge, child development knowledge, and home safety practices, and the rate of second pregnancies for adolescent parents was 5% compared to the national rate of 25%. Other studies on Healthy Families programs suggest that enrolled families are 1/3 to 1/2 as likely to maltreat their children as comparable families not enrolled. Research suggests that for every dollar spent on prevention, at least two dollars are saved on services such as health and mental health care, foster care, child welfare, juvenile facilities and special education. The average cost of providing home visitation services for one year is $3,455 per family.

Scope of Impact: State; National

Funding Sources: Grant; State

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Key Theme – Youth Development/4-H

Title: Roger Mills County Outdoor Classroom

Issue:
In 1992, the 4-H Youth Development Program Advisory Council identified the need to provide conservation programs for youth. This was a time when recycling solid waste and water conservation were priority issues for people statewide. The PAC decided that the best way to educate adults was to first teach youth and encourage them to share what they learned with the significant adults in their lives.

What Has Been Done:
The Extension staff made contact with the Natural Resource Conservation Service and a partnership was formed. These two agencies established a common goal of establishing an outdoor classroom for third grade students in our county.

The partnership between NRCS and Extension has conducted an annual outdoor classroom experience for youth for 11 years and shows no sign of ending. It has survived personnel changes, funding challenges and stormy weather.

We have reached about 2085 third grade students with the help of 550 adult volunteers over the past 11 years. The program has expanded to include schools from Beckham, Washita and Dewey Counties along with the Roger Mills County students.

Impact:
At least 10 state agencies besides the original partners are involved in the outdoor classroom each year. The students rotate from one workshop to another every 20 minutes throughout the day. They are exposed to subjects related to recycling, water conservation, animal tracking, wildlife identification and conservation, identification of soil types, soil conservation practices, natural resource management, water pollution, career opportunities, etc.

As the students enter high school, they often contact the Extension office for resource information when they are writing research papers. They remember a hands-on activity from their third grade outdoor classroom experience and want to know about a certain subject now that they are capable of handling more knowledge.

As a result of conducting the annual outdoor classroom, a Wetland Outdoor Classroom Advisory Committee was established several years ago. We wrote and received a Learn and Serve America grant that started the construction of a permanent wetlands outdoor classroom. We have numerous partners on this project with well over $150,000 dollars invested in the classroom. It is a very involved project with completion expected by 2005. It will completely be handicapped accessible and the only classroom of its kind in Western Oklahoma and the Texas Panhandle.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Title: Oklahoma Youth Forestry and Wildlife Camp

Issue:
The Oklahoma Youth Forestry and Wildlife Camp is designed to provide youth ages 13-14 from across the state with an opportunity to explore natural resource issues, land management options, and potential careers. There is a real need for balanced information and factual knowledge concerning natural resource management and the issues that shape land management policy at the private and public level. This information, along with critical thinking skills, is needed to provide young people with the tools to make informed decisions as they become the leaders, land managers, and consumers of the future. There is also a need to provide opportunities for urban youth to gain experience in outdoor settings, outdoor recreation activities, and careers in natural resource management. The Oklahoma Youth Forestry and Wildlife Camp meets these needs through hands-on learning experiences and outdoor activities.

What Has Been Done:
The annual camp is held at Beavers Bend State Park, which is located in close proximity to the forests and forest industry of Southeastern Oklahoma. Fifty-six youths from 30 counties attended the 2002 Camp. Campers participated in hands on activities such as Multiple Resource Management, Fire Suppression and Management, Urban Forestry, Forestry technical Skills, Orienteering, Wildlife Adaptations, and Riparian Ecology. In addition campers spent an afternoon with a natural resource professional of their choice and were able to explore the activities and responsibilities of that particular career. Other activities included leadership development, team building exercises, and a variety of outdoor recreation opportunities.

Impact:
The major impacts of this program will be realized as the participants become adults, leaders, land owners, and consumers. However, evaluation data indicate that participants developed an greater knowledge of the importance of natural resources to Oklahoma's Economy, an increased awareness of the opportunities for careers in natural resource management, and an understanding of the "interconnectedness" of society, wildlife, and the forest. Past campers have gone on to achieve leadership positions in resource management, education, and private enterprise. One camper was awarded a national award for his development of an urban wildlife refuge in Broken Arrow. Fifty-two percent of the campers attending in 2002 were from urban areas such as Tulsa, Oklahoma City, Ardmore, etc. In addition the camp has developed cooperative coalitions between OSU, state and Federal agencies, industry, and non-profit organizations.

Scope of Impact: Multi- State (campers and support personnel come from outside Oklahoma)

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Title: Youth Entrepreneurship

Issue:
Small businesses have led the way in the United States' longest economic boom. In addition to added employment, small businesses contribute nearly one-quarter of the Gross National Product. To continue the small business trends, individuals need to be made aware of the idea and opportunities that entrepreneurship brings. Yet small businesses remain a risky endeavor. In one 1996 report, 40% of companies failed within the first 5 years (Case, 1996). Two significant factors that help owner's succeed are found in their receiving entrepreneurship education and having watched their parents own and operate their own business. (Luisser, 1995)

Today's youth are interested in business ownership opportunities. Already over 42% of 14 year old teens are operating a free-lance type job (Lach, 1999). Seventy percent of high school

students and 84% of college students want to be an entrepreneur (Kourilsky, M.L. 1995; Stanforth & Muske).

What Has Been Done:
Through a team of Extension Educators, a grant was obtained from the Kauffman Center for Entrepreneurial Leadership to conduct Mini-Society® programs in OK. This program "provides children with opportunities to experience entrepreneurship [and] teaches entrepreneurship concepts". The team included Langston University staff. The program provides an introduction, understanding, and implementation of business, economic, and citizenship life skills

Impact:
425 youth attended 19 Mini-Society events. A pre and post test comparison of the understanding of key business concepts was administered. In 2000, the average score on those taking the pre-test was a 32.5 and the average score on those taking the post-test was a 91.8. In 2001, the average score on those taking the pre-test was 35.71 and the average score on those taking the post-test was a 70.59.

Students commented that their favorite part about Mini-Society® was "making your own business", "making money from your business", "got to sell stuff", and "the business part of making money." Eighty percent of the participants said they would return next year. Tremendous support from the parents and the community was a positive factor.

Funding: Smith-Lever; State, Kauffman Foundation

Scope of Impact: State Specific

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Title: Integrated Pest Management Youth Program

Issue:
The public is concerned with the amount of pesticides that are used for home and farm pest control. The youth of Washita County are an excellent audience to be taught the concepts of integrated pest management; however, the message has to be clear and simple.

What Has Been Done:
For the past two years, the Washita County 4-H has teamed up with the Washita County Farm Bureau Women's Committee to present an integrated pest management educational program to all students from pre-k through the sixth grade. A ladybug costume was borrowed from the OSU Entomology Department and 80,000 ladybugs were purchased. An educational program was held

at the five public schools in Washita County: Cordell, Washita Heights, Sentinel, Burns Flat/Dill City and Canute. Students are instructed on the relationship between ladybird beetles and aphids.

Impact:
The main message of the program is that "Ladybugs are Good Bugs." Approximately 1,200 students each year received a small container with about 80 ladybugs. Students around the schools, parks, yards and alfalfa fields have released over 150,000 ladybugs. Teachers interviewed during the second year showed that retention of the message that insects can be used instead of insecticide was high in the fourth, fifth and sixth grades. Retention of the message that ladybugs are good bugs was high in the lower grades.

Scope of Impact: State-specific

Funding Source(s): Grant, County, State

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Title: McClain County 4-H Teens Develop Life Skills through Service Learning

Issue:
In the 4-H pledge, 4-H'ers pledge their "hands to larger service", for their club, community, country and world. Through participation in 4-H community service projects, youth have the opportunity to gain a life skill in learning to care for and share with others. Community service becomes service learning when youth are involved in every aspect of the community service project, from planning, to implementation, to evaluation.

What Has Been Done:
After attending programs on Service Learning and Character Education,
McClain County 4-H Teen Officers developed a year-long plan of action that included three county-wide service learning projects led by the teens.

The first dealt with raising money to donate to the Activity Fund at the VA Medical Center in Norman. Teen Officers held a county-wide 4-H Garage Sale which raised $287.00. Teens contacted the VA Center and arranged a time to present a check to the Activities Committee.

The second project is an on-going activity where senior 4-H Clubs assist the County Election Board following all county elections. Five to eight 4-H'ers meet at the Courthouse and carry in ballot boxes and election equipment after each election.

The third project was called Operation Christmas and was conducted by 4-H teens from the Washington, OK community, with participation by 4-H'ers throughout the county. In Operation Christmas, stocking stuffer items were collected and distributed in "Santa Sacks" to children in foster care in McClain County.

Impact:
Eight teens and 12 adults participated in the garage sale that raised $287.00. The eight teens went to the VA Medical Center in Norman and presented the check to the Activities Committee. The Activities Committee expressed gratitude to the 4-H members for their efforts. Through this activity, 4-H'ers contributed 120 hours to community service.

Thirty-five 4-H teens assisted the County Election Board following seven county elections. The County Election Board Secretary praised the teens by saying, "Many of our election workers are elderly women who need help carrying in equipment after a long election day; this is also a wonderful way for young people to learn about elections." If the 4-H members did not assist after elections, the county would have to pay workers to carry in the ballot boxes. Through their volunteer efforts, 4-H'ers saved the county approximately $400, and contributed 70 hours of community service

Operation Christmas provided leadership opportunities for 13 teens. Twenty-six other youth and adults collected donated gifts and gave of their time to the project. Eighty "Santa Sacks" were delivered to foster children. The sacks contained items such as socks, gloves, pencils, small toys and candy worth about $7.00 per sack. This project donated a total of $560 worth of gifts and 100 hours of community service.

Scope: County-wide

Funding Sources: County; State; Smith-Lever

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Title: Agriculture Literacy in Canadian County

Issue:
Today less than 3 percent of the population is directly involved in agricultural production. Fewer and fewer Americans are tied to the land. For this reason many people have no idea how food gets to their table. Agriculture is the most basic and essential enterprise in our society. It is agriculture that converts natural resources – soil, water, air, sunlight and minerals into the foods

that nourish us and keep us healthy. If we manage these resources properly they will sustain us forever.

Few Oklahomans are aware of the role agriculture plays in our state's economy. In Oklahoma, we have 32 million acres in agricultural production. Twenty-seven percent of our state's work force is involved in employment related to agricultural production, processing or marketing. Agriculture is important to every citizen in Oklahoma because it is as essential to our fiscal health as it is to our physical health.

Tomorrow's citizens, consumers, business leaders, legislators and educators must be agriculturally literate in order to protect and preserve the advantages we gain from a strong agriculture. Even though most of our citizens will continue to live in cities, all of us will continue to depend on agriculture for the most essential things in our lives.

What Has Been Done:
Canadian County 4-H offers Agriculture Literacy programming through school enrichment programs and the Kirkpatrick 4-H Farm.

School Enrichment - "Food – Farm to Table" is a program presented in schools to youth in the fourth grade and up. In its entirety, it is about 2 hours long and starts with where major food products are grown in the U.S. and why they are grown there. It then discusses agribusiness, and what happens at each stage of processing, distribution, and transportation. The final activity deals with forming a class business to make a trail mix. The class brainstorms what is involved in running a company using the information provided throughout the program. They make many decisions from where to purchase the commodities of peanuts, raisins, chocolate chips and small cookies to advertisement and distribution. All of the class is involved as well as the teachers and at the end, they get to taste test their own product.

Kirkpatrick 4-H Farm offers hands-on agricultural learning experiences. The Farm Class Program is marketed to schools, day cares, and youth organizations. Each month a different topic is highlighted. Topics include: Pumpkin Seeds & Apple Cider; Wool & Fiber; Birds, Scarecrows & Bird Feeders; Cooking & Nutrition; Livestock & Their Young; Dirt+Compost = Soil; Fruits & Vegetables; and Tree Identification. Classes sign up for a day of activities, which include: a nature walk, a hands-on project, lunch and games. The Farm Kid Program offers urban youth the opportunity to raise, care for, and develop the life skills involved with animals. They learn about the responsibilities of daily care, general animal health, grooming, and finances, which are all a part of a livestock project.

Impact:
During the 2001-2002 school year, 309 students participated in the "Food – Farm to Table Program. Teachers administered a post program survey of information learned by students. The survey showed 78% retention of materials learned during the program. All of the classrooms involved in last years programming have registered to receive the program again, and comments from teachers indicate that the materials taught compliment and reinforce what is being taught in the classroom.

During the 2001-2002 school year, over 2,000 students were involved in programming at the Kirkpatrick 4-H Farm. Participants ranged in age from 2 – 18 and represented local schools, as well as schools from surrounding counties. After experiencing the farm, many youth and teachers indicated a greater knowledge and better understanding of the importance of agriculture to our lives and economy. Another area, which has had a positive impact, is the "Farm Kid" program. Each year, students are allowed to apply for a scholarship position at the farm where they can maintain an animal. During the previous year, there have been 4 kids involved in this aspect of the farm. One, a special needs youth, had a nanny goat and kidded her out. In his project, he acquired many life skills from birth and feeding to registration and daily care. He is entering his second year with the two nanny goats, which have been bred and will kid out this spring. He continues to be involved in leadership and citizenship roles at the farm.

Also in the scholarship program has been a set of sisters who have swine projects. This is their second year in the program. When they entered the program, there parents were separated and in the process of divorcing. Their parents are reunited and renewed their marriage vows this last summer. They attribute their involvement in the "Farm Kids" program with bringing their family back together. They have assumed leadership roles in their club, and have received numerous awards for their participation in 4-H this past year. Their confidence has grown and without the assistance of the farm and the farm manager, they would not have been able to be involved in 4-H to the degree they are now.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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B. Stakeholder Input Process

The Oklahoma Cooperative Extension Service (OCES) has a well-defined program advisory committee system that provides grass roots input for program planning. Each January or February, county extension staff seeks input from program advisory committee (PAC) members on program needs related to OCES strategic program priority areas. Advisory committee members are selected to represent various geographic areas of each county. They are representative of agricultural and natural resources interests, youth, families, community and government leaders, and the general public. Committee members also represent the ethnic

diversity of the county, as well as different socioeconomic groups. These PACs continue as described in the Plan of Work.

In addition, this past year (September-December, 2002) OCES began a new stakeholder input process to identify critical issues recognized by citizens and communities across Oklahoma. State legislative leaders urged the Oklahoma Cooperative Extension Service (OCES) to take an aggressive approach in supporting leadership and economic development for Oklahoma. House Resolution 1044 and Senate Resolution 57 are recent examples of that sentiment. Each resolution was identical in intent and nature, and both encouraged Extension to focus its resources on the needs of individual Oklahoma communities. Recognizing that Extension has offices in all 77 counties, the legislature recommended that this be accomplished through a process that accommodates a broad, cross section of citizen input to identify issues of primary importance to communities. This need recognized by the legislature fits well as Extension begins its long-range strategic planning process, the involvement of citizens in identifying needs and opportunities in the county and community will be extremely valuable. This is the first step in developing the Extension long-range Plan of Work for 2005-2009 and will require Extension to be thinking with a stronger community focus in mind.

In order to accomplish these challenges, Extension hosted Community Listening Sessions in every county in Oklahoma. They began in September and continue through the first half of December 2002. The Listening Sessions are an ambitious undertaking of Extension. The goal was to invite citizens to identify, discuss, and define their community's needs and opportunities at open forums, while building on the assets that presently exist. The critical question asked of the 2,800 attendees at the 78 listening sessions was “Considering the next 3-5 years, what are the critical issues in your community and in Oklahoma that will need to be addressed to realize a positive future for you, your family, and your community.”

Training sessions were conducted for listening session facilitators and recorders. Listening Sessions were hosted by the local Extension office and conducted by trained facilitators (OCES staff from another county or partners from other organizations or groups) and recorders. Extension Educators invited citizens who were demographically representative of the county population. Small breakout groups were used to generate issues and assess their relative importance in the county. The group as a whole then reviewed, modified and combined priority issues from the small groups. Then the large group identified priority issues.

A report of local issues prioritized by importance, highlighting the results of the Listening Session, including the participant data that can be shared with other stakeholders in the county is being distributed to participants, community leaders, state leaders, agencies, etc. Seventy-seven different county reports with listening session results and other community, business, demographic and related data will be distributed. In addition, a statewide summary will be prepared and provided to selected stakeholders and leaders. All reports, county and statewide, will be available on a website available to the public.

During fiscal 2003, Focus Forums or follow-up meetings comprised of citizens, experts and staff from local and state agencies designed to plan and implement a response that is realistic for the next 3-5 years, based on the expressed needs of the community. This will assist other agencies

and OCES partners to work with citizens in planning ways to address the issues. In addition, it will permit OCES to better identify programs and efforts to be included in its next Plan of Work This effort is designed to supplement and broaden OCES needs assessment and issue development process, and not to replace the program advisory committee efforts described in the Plan of Work. Each county was permitted to review previous PAC discussion and hold PAC meetings as needed based on listening session results and changing circumstances in the county. Considerable stakeholder input is also received through other means. 1) The state legislative and administrative branches frequently make laws, conduct hearings, empower taskforces and committees, make regulations, conduct interim studies, and directly express needs and problems which result in priority program issues. Input comes from Extension personnel participating in these processes as well as official directives. 2) Extension also regularly seeks input from commissions, agencies, groups, foundations and other organizations representing various segments of the Oklahoma public. 3) Many key program components and programs within those components have advisory groups made up of stakeholders. 4) The Director has a statewide advisory group representing a wide array of interests relevant to our mission. This group has a three-year rotating membership and meets twice a year. It is also called upon at other times to provide input to items such as extension planning and the Division strategic plan.

C. Program Review Process

No significant changes were made to the program review process stipulated in the Oklahoma five-year plan of work.

D. Evaluation of the Success of Multi and Joint Activities

1). The planned integrated activities reported in section F addressed many of the critical issues of strategic importance to stakeholders. Several of these programs directly addressed issues of cattle production and forage/hay production. These issues were consistently among the highest priorities included in input from Oklahoma agricultural producers. Similarly, several multi-state activities concentrated on production, management and economic programming related to cattle production, economic situation of farmers and public policy alternatives and actions. Each of which consistently surfaced as an important issue. Both integrated and multi-state planned activities addressed many of the community and economic development issues addressed in the listening sessions mentioned in prior section. Several of these planned activities concerned issues around alternative products - another high priority identified. The cropping integrated activities were very high priorities identified by groups representing some of the leading crops produced in the state - wheat, cotton and peanuts. Many of the pest, pesticide application, invasive species, animal waste management, and water quality issues important to Oklahoma producers don't know state boundaries and the multi-state activities are important in these efforts. National programs such as income taxes, forage testing, water quality, fire training, and youth and school programs improve efficiencies of programming over each state re-inventing the curricula. Rural health care issues are among the most often identified by groups representing communities. Integrated and multi-state activities in this area addressed this issue. Other integrated and multi-state activities addressed high priority areas of IPM and water quality.

2). Integrated activities related to alternative crops (vegetables, watermelons, peaches) particularly addressed and were conducted in areas of the state where small farm, Native American and African American audiences are particularly targeted. Several integrated programs in community and economic development particularly served geographic areas with concentrations of African American and Native American populations. Multi-state programs in alternative crops, policy and structural issues of agriculture, water quality, rural health care, home-based business, and youth also impact traditionally under-served audiences.

3). The integrated research and extension activities and multi-state activities described expected outcomes and impacts.

4). Oklahoma Cooperative Extension Service (OCES) has a long history of integrated planned programs and multi-state planned programs. Those programs reported in sections E and F are only a portion of all programs OCES conducts that are integrated between research and extension and/or are multi-state. Integrated and multi-state programs are conducted because they address the issues, problems and needs expressed by our public and they are more effective or efficient than would be the case otherwise. Thus the answer is yes. Without the closely integrated research, many of the issues and questions raised for and through the extension would not be addressed. Likewise the obviously close relationship created by joint appointments makes the feedback to research from the extension of knowledge and technology immediate. Multi-state planned activities allows extension professionals to rely on one another in the development and sharing of resources, ideas, educational materials, and the development of new and innovative programs. Those planned activities presented in sections E and F are examples of efforts that result in programs that are better and more effective.

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
(Attach Brief Summaries)

Institution OSU Cooperative Extension Service

State Oklahoma

Check one:

___ Multistate Extension Activities
___ Integrated Activities (Hatch Act Funds)
_X_ Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	Actual Expenditures FY 2000	FY 2001	FY 2002
Competitive/Sustainable Agricultural Production System	421,568.35	839,007.94	927,752.75
Healthier, More Well Nourished Population	28,018.95	62,130.99	40,432.29
Protected & Sustained Environment	26,771.31	62,220.45	39,419.93
Enhanced Economic Opportunity & Quality of Life	60,756.96	106,287.66	121,287.35
Total	537,115.57	1,069,647.04	1,128,892.32

Director

Reports
CSREES Goal 1: Integrated Activities

Name of Planned Program/Activity: Development of Harvest Aid Recommendations for Oklahoma Cotton Producers

Progress Report: New harvest aid materials and/or combinations of materials continue to be evaluated in replicated research plots as well as large scale demonstrations at the OSU Southwest Research and Extension Center at Altus. Multi-year results from these replicated experiments are used to develop recommendations for use of harvest aids for Oklahoma cotton producers. Harvest aid recommendations are extended through county educators and at producer meetings prior to the application season. Activities during the 2002 crop year include approximately 260 acres of replicated and strip research and demonstration plots, applied by OSU primarily on cotton grown by local producers. Five presentations were given to producers prior to the application season, and three field tours showing plot results were presented to producers. In addition I continue to serve as southwest region co-editor of a Beltwide Harvest Aid Project and I authored a summary for the southwest region and wrote a chapter on timing of harvest aid applications for a Beltwide Monograph Book Series. The book is offered through the national cotton foundation book series.

Contact Name: J. C. Banks

Name of Program/Activity: Soybean Row Spacing by Maturity Group Study

Progress Report: Row spacing and maturity group selection are two variables that may affect soybean yields in the Oklahoma panhandle. A field experiment was conducted in 2002 at the Oklahoma Panhandle Research and Extension Center in Goodwell, OK to examine the effects of row spacing and maturity group on soybean yield and test weight. The experiment was established as a randomized complete block design in a split-plot arrangement and four replications. The main plot treatments were row spacing (7.5, 15, and 30 inches), and subplot treatments were maturity group (II, III, and IV). The group II and group III soybean were harvested on September 26, and the group IV was harvested October 10. Plot yield, test weight and moisture were determined, and yields adjusted for moisture to 13%. The group II, III, and IV soybeans yielded 52.3, 52.5, and 58.4 bushels per acre, respectively, when averaged across row spacing. Yield differences were significant at $\alpha = 0.10$. The 7.5, 15, and 30 inch row spacing soybeans yielded 56.4, 52.2, and 54.3 bushels per acre, respectively, when averaged across maturity group. There was no significant difference in row spacing at $\alpha = 0.10$.

Contact: Curtis Bensch

Name of Planned Program/Activity: Extension Educational and Applied Research Program for Commercial Vegetable Production

Progress Report: The integrated program for commercial vegetable production during 2002 included work on several crop cultural projects. Projects on the selection of improved vegetable

cultivars included variety trials on carrot, spinach, tomato, southern pea and watermelon. Projects involved in the development of improved cultural practices for commercial vegetables included fertility and weed control work on eight different vegetable crops. All information resulting from these projects was reported in the 2002 Vegetable Trial Report MP-164. Results of these efforts were reported to producer groups at local and regional Extension educational meetings and through the distribution of the 2002 Vegetable Trial Report to County Extension Educators and local producers.

Contact: Lynn Brandenberger

Name of Planned Program/Activity: Alfalfa Production Guide

Progress Report: "Alfalfa Production Guide for the Southern Great Plains" OSU Extension Circular E-826 was written by of alfalfa research and extension specialists. It is organized in an integrated manner by activity rather than the traditional discipline orientation. The web version has links so that the user can see related topics by clicking on hot links, i.e., in the section on alfalfa stand establishment the user can easily go the a section on soil fertility, variety selection, or weed control for additional information or images about these subjects as related to stand establishment. The web version is in both PDF and HTML formats and is online at http://alfalfa.okstate.edu/pub/e826index.htm Both the hard copy and web versions are the result of several different research activities in Oklahoma and elsewhere in conjunction with extension personnel at the state, district and county. This activity seems to fit the needs of the county extension educators faced with alfalfa production questions.

Contact: John Caddel

Name of Planned Program/Activity: Promoting the Use of Improved Alfalfa Varieties

Progress report: An extensive variety testing program is conducted throughout the state as part of the alfalfa breeding program. Test results are published on the Internet at http://alfalfa.okstate.edu/var-test/alf-var.html The best varieties for Oklahoma in these tests are promoted in extension publications and in oral presentations organized by County Extension Educators. County and district extension personnel utilize the results when answering variety selection questions for our producers. This activity is responsible for the high level of acceptance of improved alfalfa varieties in the state.

Contact: John Caddel

Name of Program/Activity: Meteorology of Peach Orchards and the Efficacy of Various Freeze Protection Mechanisms

Progress Report: This is a project to compare in-orchard weather conditions with those from nearby Oklahoma Mesonet towers and also to investigate the efficacy of various freeze protection mechanisms. Automated weather stations were installed in late 1999 in 5 peach orchards in the

two major peach growing regions of the state. Data continued to be collected through 2002 and comparison of in-orchard weather conditions with Mesonet tower data is in progress. Experiments with a portable oscillating wind machine during February through April of 2000-2002 showed good potential for protecting orchards against damaging late winter/early spring freezes during nights with light winds and temperature inversion conditions. The experiments will continue in 2003. A different freeze protection mechanism (use of water) was investigated in 2001-2002: pre-freeze surface irrigation and sprinkler irrigation (below and above tree) during the night of the freeze. Results were unimpressive and showed little differences among the various treatments; these experiments are being discontinued in 2003. Results from both types of freeze protection experiments were presented at a fruit field day in Perkins in June 2002. The goal in all this research is to allow the Oklahoma Mesonet to become an operational tool for peach growers (and growers of other fruits), especially during late winter/early spring freeze conditions, and to demonstrate the efficacy of various freeze protection measures.

Contact: J. D. Carlson, Biosystems and Agricultural Engineering

Name of Program/Activity: Atmospheric Dispersion Modeling for Surface-Generated Pollutants

Progress Report: As part of an effort to model odors from hog facilities, software for the calculation of dispersion from point, line, and area sources has been developed. Given a set of steady-state weather conditions, concentrations can be obtained at selected receptor locations as well as across a rectangular grid surrounding the facility; the ability to map the pollutant plumes in a colorized diagram was added in 2001. In 2002 we integrated this dispersion model with several emission models for odor generation from lagoons and land application. The software can eventually be used as a planning tool (running historical weather data) or in an operational mode for hog facilities or other enterprises where pollutants are released. On the Web, there is already a more general operational model, the Oklahoma Dispersion Model, which utilizes current Oklahoma Mesonet data and 60-hour NGM MOS forecasts to produce maps of current and predicted atmospheric dispersion conditions (***http://agweather.mesonet.org/models/dispersion***).

Contact: J. D. Carlson

Name of Program/Activity: Irrigation Scheduling for Oklahoma Growers

Progress Report: In 2002 work continued on developing irrigation scheduling software for growers of various crops across Oklahoma. Included are alfalfa, corn, cotton, peanuts, sorghum, and soybeans. The software allows growers to specify crop and field parameters, input daily rainfall and/or irrigation amounts, and utilizes Oklahoma Mesonet reference evapotranspiration (ET) values to calculate appropriate crop coefficients. Output consists of both tabular and graphical information depicting the current water situation and the proper time and amount to irrigate. We plan to complete the first version of the software in 2003 and utilize a number of beta testers during the 2003 irrigation season. A more general model, the Oklahoma Evapotranspiration Model, which calculates reference ET values at Mesonet sites, can be found on the Web (***http://agweather.mesonet.org/models/evapotranspiration***).

Contact: J. D. Carlson

Name of Program/Activity: Using the Oklahoma Mesonet for Decision Support in Agriculture and Natural Resources

Progress Report: A continuing emphasis which integrates research with extension is the development of weather-related management tools for agriculture and natural resources and their implementation on the Oklahoma Mesonet, the statewide network of over 110 automated stations reporting weather and soil data every 15 minutes. These management tools consist of various useful maps of data derived from the Oklahoma Mesonet as well as various weather-based models which use Mesonet data. With respect to the latter, models exist for fire danger, atmospheric dispersion, evapotranspiration, insect pests (alfalfa weevil, pecan nut casebearer), and disease pests (pecan scab, peanut leafspot, watermelon anthracnose). Programming support for these products is provided by the Oklahoma Climatological Survey in Norman, OK. New products developed in 2002 included a model for livestock heat/cold stress and an interactive growing degree-day calculator. These products are available on the Oklahoma AgWeather web page (***http://agweather.mesonet.org***), which was redesigned in 2002 and is now arranged by commodity. Educational and promotional activities for the Oklahoma Mesonet and its Web-accessible products will continue in 2003, along with development of new products and improvement of existing ones.

Contact: J. D. Carlson

Name of Planned Program/Activity: Evaluation of Reporting Requirements and Options for the Commodity Programs of the Farm Security and Rural Investment Act of 2002.

Progress Report: The commodity programs of the new farm legislation, the Farm Security and Rural Investment Act of 2002, were analyzed. In cooperation with other institutions a spreadsheet was developed to assist county extension agents and farmers in their required yield and acreage reporting decisions. Information and spreadsheet operation was discussed at county meetings throughout Oklahoma.

Contact: Michael R. Dicks

Name of Planned Program/Activity: Scheduling Fungicide Applications for Control of Watermelon Anthracnose

Progress Report: Watermelons are the most important vegetable crop grown in Oklahoma. Anthracnose is more likely to cause the complete failure of a watermelon crop in a given field than any other single factor. The disease is typically controlled by application of fungicide every 7 to 10 days. However, outbreaks of the disease are sporadic because they are mediated by weather factors. In this integrated research and extension project, county educators and area and state extension and research specialists in Oklahoma collaborated to demonstrate and evaluate a method of scheduling fungicide applications that is based on site-specific measurements on relative humidity and temperature. The effectiveness of the weather-based schedule of fungicide

applications was compared with a traditional, calendar-based schedule. The cost of applying a fungicide to a watermelon crop is approximately 20 $/acre. Approximately 24,000 acres of watermelons are planted in Oklahoma each year. Assuming that the equivalent of one application of fungicide is withheld on only one quarter of the 24,000 acres of watermelon are planted in Oklahoma each year, the automated fungicide scheduling system can provide watermelon producers with an annual saving totaling $120,000.

Contact: Jim Duthie

Name of Planned Program/Activity: Effects of Nutrition, Management and Medical Treatment on the Health and Performance of Newly Arrived Stressed Stocker Cattle

Progress Report: Shipping fever and other stress-related diseases of shipped stocker and feeder cattle care estimated to cost Oklahoma cattlemen $72,175,000 annually. The economic loss varies from year to year depending on cattle prices, with the major expenses for: 1) medicines and veterinary costs, 2) reduced rate and efficiency of gain and 3)-death loss (about 63,000 cattle per year).

Numerous recommendations concerning use of drugs, feeding and management have been advanced. But few recommendations have been tested under field conditions similar to those encountered by cattle in Oklahoma. Over the past few years, a series of management recommendations for the handling of stressed cattle have evolved from our research. These are summarized in OSU Fact Sheets 9102 and 9103, and in OSU RP-9104. These procedures have proved to be successful. However, continual changes in management and treatment procedures used on cattle prior to shipment to Oklahoma make it necessary to continue to monitor responses to dietary and medical treatments to adjust for previous nutritional treatments and for resistance to drugs. Procedures to quickly identify sick animals are needed. If sickness is detected early, treatment is usually successful. Delay in the detection of illness reduces the chance of recovering both productivity and health. Additional research is needed to develop practical methods for early detection of sickness in cattle under field conditions.

The latest research and extension information has been presented at Field Days at the Willard Sparks Beef Research Center, at The Oklahoma Wheat Pasture Conference and at the semi annual Backgrounding and Receiving Lot Conference. In addition this information was presented at national scientific meetings in animal science and veterinary medicine. Our extension staff and Veterinarians conducted dozens of county and area meetings. This past year this information was presented In February 1,2001 at the National Cattlemen's Beef Association annual meeting in San Antonio.

Within Oklahoma and adjacent states most cattlemen follow the recommendations coming from OSU research on handling shipping stressed cattle. Most recently the national beef quality audit shows a dramatic reduction in losses due to improper injection sites. The Extension Service has conducted 'Beef Quality' demonstrations at nearly all sale barns in Oklahoma.

Contact Name: Donald Gill

Name of Planned Program/Activity: Acceptance of Ethanol-blended Gasoline in Oklahoma

Progress Report: Ethanol-blended gasoline has not been sold in Oklahoma in the past 20 years, primarily due to labeling laws that inhibited sales. To understand the perception of ethanol-blended gasoline in Oklahoma, a mail survey was developed and sent to 2400 registered voters in Oklahoma. Questions were asked to gain insight on consumer knowledge level and under what conditions would they purchase ethanol-blended gasoline. Nearly 700 valid surveys were secured. Preliminary data show that consumers are more likely to purchase ethanol-blended gasoline if it does not negatively affect car performance. In addition, respondents indicated that car performance is slightly more important than environmental effect. The information gained from this study will help the ethanol-blended gasoline industry understand the barriers that should be addressed plus the positive effects that could be expanded.

Contact Name: Raymond L. Huhnke

Name of Planned Program/Activity: Effect of Planting Date and Tillage on the Incidence and Severity of Take-all of Wheat

Progress Report: Replicated trials planted during fall 2001 and fall 2002 near Stillwater, Oklahoma were used to evaluate the effect of planting date and tillage on the incidence and severity of take-all in hard red winter wheat (cultivar 2174). Results from both years indicated emergence was greatest in the mid and late planting dates, but was not affected by tillage. Results from the 2001-2002 season indicated that although yields were greatest from disked plots, neither tillage practice (disking or chisel plowing) affected take-all severity. This study currently is being repeated comparing the effect(s) of moldboard plowing to that of disking as the tillage operation.

Contact Name: Robert M. Hunger

Name of Planned Program/Activity: Efficacy of Seed Treatments to Control the Aphid/Barley Yellow Dwarf Virus (BYDV) Complex

Progress Report: Replicated field plots planted near Stillwater, Oklahoma, during the 2000-2001 and the 20001-2002 seasons were used to evaluate the affect of seed treatments (Gaucho and Cruiser) on the occurrence and severity of the aphid/BYDV complex. Results from the 2000-2001 season demonstrated that in the absence of aphids and BYDV, there was no economic benefit provided by treating seed with either insecticide at any rate. During the 2001-2002 season, a high aphid incidence was observed in early-planted (13 Sep 01) plots, which resulted in presence of BYDV and reduced yields as compared to the later planted (11 Oct 01) plots. Seed treatment with either insecticide reduced aphids, BYDV and resulted in increased yields compared to untreated controls, but Gaucho at the 1.5 and 2.0 oz/cwt of seed were the most effective and yield increases in this year more than paid for the cost of treatment.

Contact Name: Robert M. Hunger

Name of Planned Program/Activity: Integrated Research and Extension Activities for Cooperatives

Progress Report: A research project "Post Merger Performance of Oklahoma Cooperatives" involved analyzing 12 years of audited financial statements of 50 Oklahoma cooperatives. The research results were presented at the National Institute of Cooperative Education in Chicago, and at the Southern Association of Agricultural Economics in Mobile Alabama. The results were also presented to Oklahoma cooperative managers at two industry conferences in Oklahoma. In a separate research project, managers and board chairmen of Oklahoma cooperatives were surveyed to determine the criteria they used in evaluating new ventures. The results of the surveys were presented at the Oklahoma Agricultural Cooperative Council Manager and Board Chair Retreat that was held during August in Oklahoma.

Contact: Phil Kenkel

Name if Planned Program or Activity: Dry-land Crop Rotations and Tillage Systems in the Oklahoma Panhandle.

Progress Report: In the first three years of the study, precipitation for April – August has been below the long-term mean. With the drought of 2002 no dry-lan crops were harvested. Therefore alternatives to the Wheat-sorghum-wheat rotation have been unsuccessful.

Contact: Rick Kochenower

Name of Planned Program or Activity: Oklahoma Grain Sorghum Performance Trials

Progress Report: Trials were planted at six locations with seven trials and reported in PT 2002-27. Plot tours and meetings were held at two locations with 45 producers attending.

Contact: Rick Kochenower

Name of Planned Program or Activity: Oklahoma Panhandle Corn Trial

Progress Report: Two irrigated trials were planted in the panhandle one at the Oklahoma Panhandle Research and Extension Center and the other on a cooperator. Results of ensilage and grain yield were reported in PT 2002-26.

Contact: Rick Kochenower

Name of Planned Program or Activity: Panhandle Wheat Variety Trials

Progress Report: Five trials were planted at four locations in the panhandle with only one trial being harvested. Results are reported in PT 2002-20. Plot tours were held at OPREC attended by 35 producers and other agribusiness personnel.

Contact: Rick Kochenower

Name of Planned Program or Activity: Third Annual Panhandle Crop Production Clinic

Progress Report: On March 6, 2002 Crop production clinic was held at the Oklahoma Panhandle Research and Extension Center. Invited speakers gave presentations on Corn weed control, limited irrigation and planting date in the panhandle region. Variable rate fertilizer application and development of the sensors was also presented. Forage grasses and Bermuda grass production for the high plains was also presented. Thirty producers, agriculture business personnel, extension agriculture educators, and 19 crop consultants attended the clinic.

Contact: Rick Kochenower

Name of Planned Program or Activity: Oklahoma Panhandle Research and Extension Center Research Highlights

Progress Report: One hundred and fifty copies were published and people attending the Crop Production Clinic received forty-nine copies. Another 90 were requested during the rest of the year.

Contact: Rick Kochenower

Name of Planned Program/Activity: Use of Byproduct Feeds to Replace High Quality Forage

Progress Report: Data were generated from OAES resources (cattle, facilities, etc.) and private funding sources evaluating systems to utilize soybean hulls as a replacement for high quality forage during times when high quality forage was not available due to season of the year or drought. This series of experiments and case studies have been presented in abstract form at national scientific meetings and in the OSU Animal Science Research Report. This work has resulted in the development of management guidelines for beef cattle growing programs based on self-fed or hand-fed soybean hulls that can be very cost effective. The self-fed system requires very little labor, facilities and management on the part of the producer. Educational meetings were continued from previous years. Development of an extension fact sheet is underway. A PowerPoint presentation has been updated and distributed to extension staff and veterinarians. This alternative management system continues to enjoy widespread adoption across the cattle industry in Oklahoma. Commodity brokerage firms report that soybean hull sales have more than tripled over the past four years. According to faculty from other state universities, this alternative nutrition program is being adopted in Arkansas, Kansas, Missouri, Mississippi, Kentucky, Tennessee and North Carolina.

Contact Name: David Lalman

Name of Planned Program/Activity: Increased Use Of Better Adapted/More Appropriate Turfgrasses That Are More Resource-Use-Efficient

Progress Report: The turfgrass industry remains under intensive scrutiny to reduce labor, pesticide, fertilizer and other cultural inputs while providing cost effective i) sod or sprig production, or in the case of maintained turf, ii) soil erosion control, high visual quality and/or functional quality for the playing of sports. We have tested some 1,395 commercially available and 3,075 experimental turfgrass varieties across 21 species for adaptation to lawn, roadside, parks & grounds, golf course and sod production applications in OK during the last 12 years. Research continued in 2002 regarding cultivar testing and proper management. Research results can be used directly by the turfgrass specialist or end user when making recommendations concerning turfgrass selection for a given site. Over 240 consultations were conducted in 2002 via phone, fax, US mail, email and site visits concerning selection, installation and management of the best adapted turfgrass varieties. During phone consultations, approximately 75% of consultees indicated that they would pursue purchase and installation of the best adapted cultivars as indicated by the turfgrass specialist. This percentage is expected to rise once addition stocks of newly released cultivars increase to fill market demand. Over 835 individuals received training on proper turfgrass selection and management in 5 workshops and conference conducted in the region during 2002. During new construction and renovation of golf courses and athletic fields, better-adapted turfgrass varieties are being utilized in over 95% of cases in Oklahoma. Fungicide use for dollarspot disease control has been reduced by at least 10% when L-93 creeping bentgrass has been implemented on golf course putting greens in Oklahoma.

Contact: Dennis Martin

Name of Planned Program/Activity: Integrated Strategies For Management Of Spring Dead Spot Disease Of Turf Bermudagrass

Progress Report: Spring dead spot (SDS) is the most serious disease of turf bermudagrass in Oklahoma and in the transition zone states where the temperate and subtropical climate zones converge. Five multi-year trials that screened 80 bermudagrasses for SDS disease resistance have been completed. Three trials testing 55 varieties remained underway in 2002. Ten varieties with good or very good SDS disease resistance have been identified thus far in our joint state cooperative effort with Kansas State University. Patriot bermudagrass, a vegetatively propagated variety with improved cold hardiness and increased SDS disease resistance was developed at OSU and commercially released in 2002. Proper varietal selection information as well as integrated management strategies for SDS management was transferred to 450 turf industry leaders at an SDS management workshop, 8 master gardener training sessions, the 3rd AR-OK Turfgrass Short Course, the Kansas Turf Conference and the 57th Annual Oklahoma Turfgrass Conference. All attendees (100%) who completed an SDS workshop survey, immediately following training, indicated that they would integrate our recommendations into their existing programs to manage the disease. Over 90% of workshop attendees indicated that they will not attempt to use fungicides in controlling spring dead spot, as our research has indicated that currently available fungicides are ineffective in controlling this particular disease. Following our recommended practices will not

eliminate but rather reduce severity of the disease, decrease time to recovery, and reduce disease management costs relative to use of fungicides alone. An article covering the status of our interdepartmental multi-state spring dead spot resistant work was published in the Turf and Environmental Research Report, which has distribution to over 21,000 members worldwide.

Contact: Dennis Martin

Name of Planned Program/Activity: Pecan and Beef Cattle Production Systems.

Progress Report: The project includes demonstration/research plots in Okfuskee County, OK and Miller County AR. It demonstrates a native pecan, beef cattle double crop system using legumes as an orchard floor cover and livestock forage. The SARE funded project title is "Demonstration of a Sustainable Integrated Production System for Native Pecan and Beef Cattle Producers and its Effect on Ecology in Flood Prone Areas".

Data have been collected for three years on pecan tree growth parameters, forage quality and quantity, pecan yield (four harvests) and quality and beef production (three years) under flood and non-flood conditions. Extension programs related to this research project have attracted over 350 growers. Economic analysis is underway.

Project summaries have been reported in regional popular magazines Stockman's Grassland Farmer and Oklahoma Farmer Stockman and at grower meetings in Texas, Arkansas and Oklahoma.

Contact: Dean McCraw and Becky Carroll

Name of Planned Program/Activity: Peach Orchard Management Systems.

Progress Report: The project emphasis is on effective reduced spray total orchard management programs for commercial fresh market peach production. The program's current thrust emphasizes refinement of trapping and thresholds, quality assessment and effects on market acceptability. Data collection over the past 5 years suggest that pesticide applications can be reduced from the industry standard of 10 or more to a maximum of 6 utilizing best management practices without sacrificing product quality. Oral presentations of results have been made at grower meetings in Oklahoma and Arkansas, The Southern Region American Society for Horticultural Science, Mobile Alabama, The Southeast Professional Fruit Workers meeting in McMinville, Tenn and the International Peach Symposium, Davis California.

Contact: Dean McCraw and Becky Carroll

Name of Planned Program/Activity: OK Wine Grape Cultural Systems and Cultivar Evaluation

Progress Report: A grape research/demonstration cultivar trial consisting of 13 cultivars of wine grapes with potential for production in OK as well as two rootstock evaluation trials was established in April 2001 at the Oklahoma Fruit Research Station. Entries are under evaluation for

hardiness, vigor, growth characteristics and wine quality. On farm test plantings have been established with commercial vineyards at three locations to compare grafted with own root vines of 12 varieties under varying climatic conditions in Oklahoma. Likewise, pest management programs including insect and disease scouting and assessment are underway on station plots as well as grower vineyards in at least three locations.
The Extension program accompanying this project includes the Oklahoma Grape Management Course now in its second offering. The course, which consists of 6 monthly meetings utilizing the research station plots throughout the year, has included 120 present and prospective grape growers.

Contact: Dean McCraw

Name of Planned Program/Activity: Cultural Practices for Vegetable Production

Progress Report: A watermelon cultivar evaluation trial was conducted to determine the cultivars with the best yield, sugar content, and lycopene content when grown under Oklahoma conditions. The purpose of the study was to provide current, detailed information to state and national producers, to enable them to produce high quality food under the most efficient system. This study involved research efforts to determine the best cultivars for local conditions and extension efforts to disseminate the information to appropriate end-users. Twenty-six cultivars were grown under practices similar to typical farmer conditions. Fertilizer and pest control methods were followed according to OSU recommendations, and were similar to those followed by Oklahoma farmers. The study included personnel from Oklahoma State University and USDA/ARS. This study was also conducted in cooperation with various seed companies, who contributed seed samples from currently available cultivars, as well as experimental cultivars that might be available in the near future if they are determined to be suitable for grower conditions. The experiment was demonstrated to local and state farmers and agri-business personnel at a state-wide field day in June, 2002. Results of the study were presented at a multi-state cucurbit meeting in Chickasha, Ok in December 2002. Results were also presented at a Southern Region - ASHS meeting in Mobile, Alabama in February 2003. Written reports detailing the results were printed in an OSU variety trial publication and were made available to Oklahoma farmers and county extension personnel in January 2003. A written abstract has been submitted, and will be printed later this year in a national journal (HortScience) detailing the results to a national audience. The result has been to provide farmers and associated decision makers with current, up-to-date information about vegetable production.

Contact: Warren Roberts

Name of Planned Program/Activity: Fruit Crop Ecology and Management

Progress Report: Fruit Crop Ecology and Management is a tool for growers and consultants who want to examine their farming practices and evaluate new alternatives. This new book explores growing fruit within a complex web that connects soil, plants, animals, humans, landscapes and the atmosphere. Readers will learn how these factors interact in a changing environment where it

is impossible to change one aspect of a farming system without affecting others. This publication is an interdisciplinary effort to bring together knowledge and practice. It was written by specialists in sustainable agriculture, pest management, horticulture, social sciences, economics and agricultural meteorology. Growers, consultants, agricultural journalists and faculty at other universities joined Michigan State University Extension as reviewers and authors. Fruit Crop Ecology and Management encompass ecological principles and horticultural practices for both tree fruits and small fruits. The primary region of reference is the United States Great Lakes region; however, much of the information can be applied well beyond that area. The authors present fundamental knowledge rather than specific recommendations, anticipating readers will seek additional references for details about practices for integrated pest management, organic, or other approaches to farming.

Contact: Jose E. Sanchez

Name of Planned Program/Activity: Introducing Legume Cover Crops into Large Scale Grain-Cattle Production Systems

Progress Report: We are proposing the introduction of legume cover crops to help mitigate the negative impact of the fallow period after wheat harvest and to enhance the sustainability of grain-cattle operations. Cover crops have been rarely studied in the Oklahoma Panhandle; thus, we plan to evaluate several potentially adaptable legume species. Successfully establishing legume cover crops will allow farmers to expand their grazing season. Cattle normally graze on young wheat from December to March. Interseeding cover crop into wheat stubble immediately after harvest would make grazing possible during September, October, and November. Legumes will be selected for their potential to perform well under high temperature conditions, their ability to produce large quantities of high quality biomass, livestock preference and low bloating potential, and their ability to tolerate drought conditions. Legume cover crops will be grown in a reduced tillage environment thereby adding important benefits such as erosion control and enhanced soil and water quality. Additional agronomic benefits may include enhanced wheat suppression with reduced or no herbicide applications, increased levels of soil organic matter, and increased soil nitrogen supplying capacity. This on-farm research project is a jointed effort of the Texas County agriculture educator, researchers from OSU Departments of Plant and Soil Sciences and Animal Science at the Oklahoma Panhandle Research and Extension Center, Natural Resources Conservation Service specialists, and several Texas County producers. We are expecting to initiate this project in spring 2004 upon grant approval.

Contact: Jose E. Sanchez

Name of Planned Program/Activity: Managing Waterborne Plant Pathogens of Nursery Crops in Recycling Irrigation Systems

Progress Report: In addition to OAES base funding, a research grant from the Horticultural Research Institute arm of the American Nursery & Landscape Association provided support for this integrated effort during 2002. Research focused on understanding the fate of infective units of the waterborne fungal pathogen, *Phytophthora*, captured runoff held in retention basins prior to

reuse. These included studies of the survival and dispersal of both motile and encysted zoospores. Brief reports of the research results have been published and full manuscripts are in preparation. In addition, we have developed recommendations for nursery managers on how to handle captured runoff to reduce pathogen levels based on our research findings. We have reported these in two nursery industry journals: The Western (The Magazine of the Western Nursery and Landscape Association), Fall 2002, Vol.4, No 3, pp. 40-41; and Nursery News, December 2002, Vol. 17, No. 12, pp14-15.

Contact: Sharon L. von Broembsen

Name of Planned Program/Activity: Livestock Production and Marketing Decision Making

Progress Report: Feeder cattle buyers typically pay price premiums for larger frame size and heavier muscled feeder calves. Performance and net return differences were estimated for three frame sizes (small, medium, and large) and two muscling levels (#1 and #2) of feeder cattle through the stocker, feedlot, and carcass phases. Results indicated performance differences in some areas (feedlot feed conversion, slaughter weight, rib-eye area, and yield grade) but not others (stocker and feedlot average daily gain, and quality grade). No significant net return differences related to frame and muscling were found.

Previous research showed small price premiums paid by buyers for preconditioned calves. Two data sets, one time series and one cross sectional, were used to estimate the market value of feeder calf preconditioning programs. Feeder cattle buyers paid price premiums ranging from $1.96 to $3.36/cwt. This premium was less than the amount needed to offset the added costs of preconditioning by itself. However, supplementing the gain from a price premium with selling more pounds of healthier calves, can make preconditioning cost effective.

A survey of cattle feeders in four major cattle feeding states (TX, KS, NE, IA) showed clearly that grid pricing is rapidly replacing live weight pricing of fed cattle. Two efforts were made to enhance learning about grid pricing. First, grid pricing was incorporated into the *Fed Cattle Market Simulator* for three genetic types of cattle (high quality, low yielding; medium quality, medium yielding; low quality, high yielding). Second, a grid pricing calculator (spreadsheet) was developed to assist producers learn the implications of feeding cattle for alternative grids and for purchasing feeder cattle that will perform differently in carcass form. Preliminary analysis indicates recommendations regarding how to price cattle depend both on cattle genetics and market conditions.

Contact: Clement Ward

CSREES Goal 3 – Integrated Activities

Name of Planned Program/Activity: Evaluation of the Oklahoma Cooperative Extension Service Nutrition Web Site by Family and Consumer Science County Extension Educators

Progress Report: This project is evaluating the Oklahoma Cooperative Extension Service (OCES) Nutrition Web Site by OCES Family and Consumer Science (FCS) County Extension Educators. An OCES Nutrition Web Site was developed and in-service training on the OCES Nutrition Web Site was conducted. Pre-training, post-training, and 6-month follow-up evaluation was conducted with OCES FCS County Extension Educators related to the OCES Nutrition Resource Web Site. Data were analyzed using the SPSS means, frequencies, chi-square, independent t-test, and paired t-test procedures.

The use of the OCES Nutrition Web Site by OCES-FCS County Extension Educators and level of comfort in using the OCES Nutrition Web Site was evaluated before, immediately after, and six months after in-service training. A significant increase was observed in the OCES-FCS County Extension Educators expected use and level of comfort regarding the OCES Nutrition Web Site from before and immediately after the in-service training. A significant decrease was observed in OCES-FCS County Extension Educators reported use and level of comfort regarding the OCES Nutrition Web Site from immediately after to six months after the in-service training. However, OCES-FCS County Extension Educators reported use and level of comfort regarding the OCES Nutrition Web Site six months after the in-service training was still significantly higher than before the in-service training. These results indicate a need for the OCES Cooperative Extension Service State Nutrition Specialist to continue to provide OCES-FCS County Extension Educators with periodic training and support regarding the OCES Nutrition Web Site after initial in-service training.

OCES-FCS County Extension Educators' preferences regarding web site characteristics, information sections, and information formats on the OCES Nutrition Web Site also were evaluated immediately after and six months after in-service training. A significant increase was observed in OCES-FCS County Extension Educators ranking for "Hot Topic" as an information section and "News releases" as an information format six months after the in-service compared to immediately after the in-service. A significant decrease was observed in OCES-FCS County Extension Educators ranking for "PowerPoint presentations" as an information format six months after the in-service compared to immediately after the in-service. A significant decrease was also observed in OCES-FCS County Extension ranking of "Educational Programs" as a use for the OCES Nutrition Web Site information six months after the in-service compared to immediately after the in-service. These results indicate immediately after the in-service OCES-FCS County Extension Educators primarily viewed the OCES Nutrition Web Site as a source of core nutrition information that could be used for county nutrition programming; whereas six months after the in-service OCES-FCS County Extension Educators began to view the OCES Nutrition Web Site as a source of current issue based information that could be used to address immediate consumer questions and news releases.

Contact: Janice Hermann

Name of Planned Program/Activity: Evaluation of Weight Management Education on the Web by Consumers

Progress Report: This project is evaluating the use and acceptance of receiving Weight Management education on the OCES Nutrition Web Site by consumers. This project is also

evaluating consumer preferences regarding web site characteristics, information sections, and information formats. An Interactive Weight Management Web Section was developed on the OCES Nutrition Web Site. Oklahoma State University Institutional Review Board Human Subjects approval has been received. Evaluation of the OCES Interactive Weight Management Web Section will include focus groups and post web site questionnaire. Data collection will begin in 2003.

Contact: Janice Hermann

Name of Planned Program/Activity: Extension/Evaluation of Nutrition Education on the Web by Professionals and Consumers

Progress Report: Two research-extension projects are in progress related to evaluation of nutrition education on the Web. One project is evaluating the Oklahoma Cooperative Extension Service (OCES) Nutrition Resource Web Site by OCES Family and Consumer Science (FCS) County Extension Educators. An OCES Nutrition Resource Web Site was developed and in-service training on the OCES Nutrition Resource Web Site was conducted. Pre-training, post-training, and 6-month follow-up evaluation was conducted with OCES FCS County Extension Educators related to their use and acceptance of the OCES Nutrition Resource Web Site. Data analysis is in progress. Another project is evaluating the use and acceptance of receiving weight management education on the OCES Nutrition Web Site by consumers. The OCES Nutrition Web page on weight management is in development and OSU IRB Human Subjects approval is underway. Data collection will begin spring 2002.

Contact: Janice Hermann

CSREES Goal 4 – Integrated Activities

Name of Planned Program/Activity: Managing Arthropod Pests on Vegetable Crops in the South Central U.S.

Progress Report:
1. Evaluate alternative insecticides for use in IPM programs on watermelon and leafy greens crops and develop databases sufficient to serve as support for registration and use on the crops.

Integration with extension: During FY2002 we conducted 12 insecticide evaluation trials in small plots at the WWAREC and on cooperating producers farms. Results were published in Arthropod Management Tests. Results were summarized for producers and presented at state and regional producer meetings as written technical reports and/or verbal presentations. Meetings at which presentations were made included regional growers meetings in Chickasaw and Hydro, OK. The reports were also circulated nation wide to supporting ag industry leaders and representatives. Results were used to support recommendations made to IR4 during the annual prioritization conference and will be used to support Section 18 and 24c labeling for Oklahoma producers.

2. Develop alternative management methods to replace the use of insecticides in watermelon and leafy greens crop production.

Integration with extension: A third year of a cooperative project was conducted with the Southeast Area Horticultural specialist to evaluate effectiveness of a trap crop management system for early season pests on watermelon. This project is funded partially through the USDA/CSREES Pest Management Alternatives Program. Results were presented as technical posters at the annual Entomological Society of America meeting, November 2002, Ft. Lauderdale, FL and at the regional southwestern ESA meeting, February 2003, Oklahoma City.

3. Determine action thresholds for insect pests on processing greens crops destined for varying markets.

Integration with extension: Results of this work have been published in technical journals. The results were presented to producers and supporting industry personnel at the at a regional producers meeting in Hydro, OK, January 2003.

4. Determine dose response relations for botanical insecticides.

Integration with extension: This is primarily a research project leading to publication in technical journals of which one manuscript has been published. Results are being used to support reregistration of organophosphate and carbamate insecticides under review by US/EPA and that are deemed necessary for production by farmers in this region.

5. Results from research.

Results from our various research projects dealing with insect pests on watermelon were incorporated into recommendations for producers as published in the revised Cucurbit Production Manual, edited by Lynn Brandenberger and Pat Bolin with the chapter on insect management written by me.

Contact Name: Jonathan Edelson

Name of Planned Program/Activity: Integrated Pest Management Research, Technology Transfer, and Education Efforts Concerning Biology and Control of Wood-Destroying Subterranean Termites – 2002

Progress Report: Statewide, national, and international laboratory and field studies were conducted to elucidate subterranean termite foraging biology, taxonomy, and life habits. Additional field studies were initiated to evaluate new termite management technologies to include low environmental impact termite baits, non-repellent termiticides, long-term fate of termiticides in soil, and physical barriers. Training and technology transfer for pest management professionals was conducted at the Pinkston Education Facility for Structural Urban Pests, providing certification training for 86 pesticide applicators. Additionally, more than 2,300 pest control industry professionals, master gardeners, scientists, technicians, extension agents, and private

citizens attended 19 conferences and workshops (Florida, Illinois, Maryland, Oklahoma, South Carolina, Texas, Mexico) designed to provide information and training on termite biology research and pest management. These gatherings have led to businesses expanding their workforce to accommodate the increased use of baits and physical barriers in lieu of termiticides applied to soils. The integrated pest management training and teaching approach in these gatherings led to increased understanding of sanitation practices around structures, termite-resistant building construction practices, improved monitoring and inspection of wooden buildings, and eliminating conditions conducive to termite infestation. This reduced costs and pesticide contamination risk to building owners relative to termite control by eliminating expenditures that would be incurred by normally employed long-established pesticide applications to soil.

Contact: Brad Kard

CSREES Goal 5 – Integrated Activities

Name of Planned Program/Activity: Preparing Community Service Tools for Rural Decision Makers

Progress Report: Models that can be used by Extension personnel have been developed. These include: (1) impact models and (2) community service budgets. The health impact was modified and improved in 2002. Extension and Office of Rural Health professionals are using it in about 30 states. Community Service Budget Guidebooks were completed for fire, solid waste, emergency medical services, and kidney dialysis. Several others have been initiated. These budgets allow Extension workers to work with community leaders in determining how to provide essential services within their financial constraints. The budget was used in about 60 communities in Oklahoma in 2002.

Contact: Gerald A. Doeksen

Name of Planned Program/Activity: Retail Trade and Gap Analysis

Progress Report: A database and methodology has been developed and which allows analysis of local retail trade trends. The database is maintained and updated annually. This applied research project is then presented to community leaders as a written report and in PowerPoint format. Over the past year, 33 communities have utilized this program in Extension educational settings. The research was presented at the National "Community and Resources Economic Development" extension conference at a "research roundtable" in early 2002.

Contact: Mike D. Woods

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
(Attach Brief Summaries)

Institution OSU Cooperative Extension Service

State Oklahoma

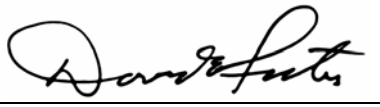
Check one:

X Multistate Extension Activities

___ Integrated Activities (Hatch Act Funds)

___ Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	Actual Expenditures FY 2000	FY 2001	FY 2002	FY 2003
Competitive/Sustainable Agricultural Production System	81,443.18	167,208.37	185,530.25	
Healthier, More Well Nourished Population	1,290.91	2,357.03	4,051.15	
Protected & Sustained Environment	41,409.93	81,736.96	67,770.08	
Enhanced Economic Opportunity & Quality of Life	32,738.18	58,770.71	58,322.49	
Total	156,882.20	310,073.07	315,673.97	-



Director

Reports
CSREES Goal 1: Multi-State Activities

Name of Planned Activity/Program: Integrated Resource Management

Progress Report:

- Presented posters, "Profit Maximizing Forage/Livestock Systems for Small Farms", and "Reducing Cow/Calf Nutrition Costs for Small Oklahoma Farms" at 2002 SAEA meetings.
- Participated in a Big 12 Faculty Exchange to Texas A&M
    - Revised 3 OSU Fact Sheets: F-231, Cow/Calf Financial and Production Performance: hat We Are Learning from Standardized Performance Analysis (SPA) data, F-232, Interpreting Cow/Calf Standardized Performance Analysis (SPA) Results, F-222, Cow-Calf Standardized Performance Analysis (SPA)
    - Revised one SPA Fact Sheet: SPA-33, QuickBooks Pro Chart of Accounts for Beef Cattle Farm and Ranch Managers Doing the SPA Analysis
    - Reviewed QuickBooks instructions and case example for managerial accounting information systems, providing me with the capability to begin developing comparable instructions for Quicken users.
    - Reviewed Beef Partnership in Extension (PEP) project results and discussed potential for application in Oklahoma with McGrann and Extension veterinarian project leader.
    - Presented and shared software developed at OSU, namely livestock enterprise budgets, ranch optimization model (linear program) and livestock leasing spreadsheets.
- Began collaboration on and drafted outline of website for Beginning Ranchers in multi-state area and agreed on division of labor with topics divided among Falconer, Bevers, and McGrann (all associated with Texas A&M) and Jones (Kansas State). Website will be designed to provide one page answers to frequently asked questions with links to further information and references.
- Planned and hosted OK-KS-TX Extension farm management meetings to discuss and work on assorted ranch management projects.
- Began planning for 2003 Managerial Accounting multi-state workshop for accountants and ranchers in Ardmore.

Contact: Damona Doye

Name of Planned Activity/Program: Southern Extension Farm Management Committee (SEFMC)

Progress Report:

- Helped plan and develop national enterprise budget survey, database and pre-conference for 2002 SAEA meetings. Increased awareness of existing budgets and budget generating software tools while documenting methodology used in developing them, which benefited Extension staff and educators nationally, saving time and energy in developing budgets. Website continues to develop (see http://agecon.okstate.edu/survey_new/indexNew.asp)

- Developed and moderated an Organized Symposia at the AAEA meetings, "Opportunities for Collaboration in Enterprise Budget Development" as a follow-up to the Budget Summit
- Co-PI on a Risk Management proposal, "Southern Region Enterprise Budget Resources: Database, Training and Educational Materials", to continue budget discussions.
- Shared new materials developed (e.g. Quicken notebooks and newsletters) on an ongoing basis. Educators don't have to re-create the wheel and producers benefit from years of experience.

Contact: Damona Doye

Name of Planned Activity/Program: Miscellaneous

Progress Report:

- Serve on American Agricultural Economics Association (AAEA) Extension Section board, currently as president-elect. Help plan contributions to AAEA meetings (pre-conference, organized symposia, outlook sessions, luncheon, receptions, etc.) to increase their value as a professional development opportunity to Extension economists. Drafted proposal for new product (expanded searchable directory of membership)
- Served on the AAEA Communications Working Group and now on the Editorial Board for Choices on-line magazine. Assessed communications vehicles used by the association and made recommendations for changes to improve the outreach within and outside the profession.
- Chaired the AAEA Extension Awards subcommittee, which provides an opportunity for recognizing individuals and showcasing successful programs to allow others to learn from them nationally.
- Served as technical reviewer for the MISA Business Planning Guidebook being published through a national SARE grant.
- Served on the SAEA Extension Awards Committee, which provides an opportunity for recognizing individuals and showcasing successful programs to allow others to learn from them regionally.

Contact: Damona Doye

Name of Planned Activity/Program: Multi-State Cooperative Projects 2002

Progress Report: Multi-state projects during 2002 included efforts directed at evaluation of vegetable germplasm, screening of new weed control materials for use in vegetable crops. Detailed results of these studies are included in the 2002 Vegetable Trial Report MP-164 and are available through the Department of Horticulture at Oklahoma State University.

Watermelon evaluations included 22 different cultivars including both seeded hybrids and seedless. Evaluations were carried out as a cooperative project with extension and research colleagues at Texas A&M. Dr. Warren Roberts acted as the coordinator of this project that was located at the Wes Watkins Research and Extension Center at Lane. Watermelon evaluations at Lane included the same cultivars, production system and recorded data as completed in Texas.

These efforts will allow commercial producers and seedsman to compare commercially available watermelon cultivars over a wide range of conditions when grown under similar production systems.

Southern pea evaluation is a cooperative effort between eight land grant universities located in Oklahoma, Texas, Arkansas, Missouri, Louisiana, Mississippi, South Carolina and Alabama. The program is titled the Southern Cooperative Pea Trial. During 2002 19 advanced breeding lines were included in the replicated trial and 16 in the observational trials at the Bixby Vegetable Station.

Weed control research and demonstration work during 2002 included cooperative work with research colleagues at the University of Arkansas, Texas A&M and Interregional Project # 4 of U.S.D.A. (IR-4). Dr. James Shrefler and my self were the primary investigators for this work in Oklahoma. During 2002, fourteen different study/demonstrations were carried out throughout the state and included work on watermelon, southern pea, snap bean, squash, spinach, brassicas, cantaloupe, and pepper.

Other States Involved: Oklahoma, Texas, Arkansas, Missouri, Louisiana, Mississippi, South Carolina and Alabama

Contact: Lynn P. Brandenberger

Name of Planned Program/Activity: North Central Region Farm Management Committee

Progress Report: In 2002, semi-annual committee meetings were held in Nashville and Louisville with activities including the development educational material, regional publications, seminars and workshops for Farm and Agri-business professionals, and individual producers. A joint meeting with the Southern Region Farm Management committee was held June 11-12, 2002. Plans were developed for the joint NCFMEC and SEFMC Triennial Conference to be held in June 2004, in Lexington, Kentucky. The North Central Region Farm Management Committee activities benefit from the support of the Farm Foundation.

Contact: Mike L. Hardin

Name of Planned Program/Activity: National Extension Advisory Committee on Federal Taxation

Progress Report: In 2002, the committee cooperated with the Internal Revenue Service to write and distribute the 2002 IRS Publication 225, Farmers Tax Guide that has been distributed to more than 300,000 Ag Producers and tax professionals across the nation. Participants from 20 states are represented on the committee. The Joint Committee on Taxation staff briefed members, and I presented to the Joint Committee a proposed social security law change to help farmers qualify for social security survivors and disability benefits. Members represent both extension and research appointments in their respective states. These activities are conducted under a Memorandum of Understanding between USDA and IRS.

The committee meets with IRS in Washington each year in May to jointly write the Farmer's Tax Guide. The agenda also includes presentations from USDA and a meeting with the Joint Committee on Taxation. This important meeting allows our committee to inform the Joint Tax Committee on Ag taxation problems and issues.

Contact: Mike L. Hardin

Name of Planned Program/Activity: National Income Tax Preparer Education

Progress Report: In 2002, representatives of more than 20 states cooperated to develop educational material and conduct seminars and workshops for Farm and Non-farm tax professionals. More than 29,300 tax professionals attended these sponsored seminars nation wide. The National Farm Tax Workbook is also used to provide training for IRS and state department of revenue employees. Contributors represent both extension and research appointments at their respective Universities, IRS employees and individual tax school instructors. Educational materials were used in 28 states. This year participating states formed a Non-Profit Foundation, The Land Grant University Tax Educational Foundation, (LGUTEF) to coordinate and enhance the effectiveness of national and state tax education activities by land grant university professionals. States participating and total professionals trained declined this year because the University of Illinois produced and sold competing tax educational materials.

Contact: Mike L. Hardin

Name of Planned Program/Activity: NCR-194 Regional Research On Cooperatives

Progress Report:
A research and outreach forum : Farmers Cooperative Conference was conducted in St. Louis during November. The annual two-day forum involving participation from academics, upper and middle management personnel from cooperatives, directors from cooperatives, and researchers in government. It focuses on ongoing research on cooperatives, identifying research issues, and coordinating research projects and outreach efforts among the participants.

Contact: Phil Kenkel

Name of Planned Program/Activity: National Ag Marketing Resource Center

Progress Report: The national Agricultural Marketing Resource Center is a joint project involving Iowa State University, Kansas State University, University of California-Davis and Oklahoma State University. The AGMRC project created an electronic, Web-based library with powerful search capabilities to make value-added information and other resources available to producers. Provide electronically available information and resources on value-added markets and industries including a wide variety of commodities and products. It also provides value-added business and economic analysis tools, including information on business principles, legal, financial and logistical issues. The center also coordinates specialists whose role is to work with

producers and value-added producer groups and businesses. The AGMRC web-site (www.agmrc.org) came on-line in July, 2002 and contains over 150 publications.

Contact: Phil Kenkel

Name of Planned Program/Activity: Great Plains Cooperative Consortium

Progress Report: The Great Plains Cooperative Consortium involves academic cooperative specialists from Oklahoma State University, Kansas State University, University of Missouri, Texas A&M University and Colorado State University as well as representatives from state cooperative councils in the above states. The GPCC coordinates research, outreach projects and conferences in the participating states. Among the activities completed in 2002 include the development of a power-point CD with audio "Understanding Regional Losses". The presentation assists cooperative managers and board of director members in understanding the impact of the Farmland Industries bankruptcy on their local cooperative.

Contact: Phil Kenkel

Name of Planned Activity/Program: North Central Region Cow/Calf Committee

Progress Report: The objective of this multi-state group is to exchange ideas, data, information, and research techniques in a cooperative, interdisciplinary effort among research stations to maintain an environmentally and economically sound beef cow/calf industry. The group meets annually for a two-day sharing and planning session. The meeting location is rotated among states so that different production systems and research programs can be visited. The group also collaborates to publish fact sheets and sponsor/organize an annual symposium at the Midwest Animal Science Meetings in Des Moines, Iowa. Proceedings from this symposium are published in peer-reviewed journals or published as extension fact sheets. One symposium was held and two review articles were published in 2002. Dr. Lalman serves as the Chairman of this group for 2003.

Other States Involved: CO, IL, IN, IA, KS, MI, MN, MO, MT, NE, ND, OK, SD, VA, OH, WI

Contact: David Lalman

Name of Planned Program/Activity: Increased Use of Better Adapted Turf Bermudagrasses in Transition Zone States

Progress Report: Selection and use of the best adapted turfgrass varieties results in turfgrass stands providing improved quality of human life through reductions in soil erosion, urban noise, glare, particulate pollution, and sports turf injuries. Reduced potential of off-target environmental impacts also occurs due to reduced maintenance inputs when using best-adapted turfgrasses. Over 835 turfgrass managers were training on proper turfgrass selection techniques during 5 multi-state turf workshops in Kansas, Arkansas and Oklahoma. All managers indicated that they would use

the information in making proper turfgrass selection decisions in their respective states. An Arkansas-Oklahoma turfgrass short course manual and digital presentation were updated to meet region-specific needs. These resources were adopted by two additional lawn care enterprises and two University grounds divisions for use in employee training. An on-site turf production demonstration at Salisbury, Maryland assisted in recruiting two new licensees for the 2002 OSU turf bermudagrass release named Patriot (OKC 18-4). These licensees will serve in producing Patriot, with most sales going to the states of Maryland, North Carolina and Virginia. Patriot has improved cold hardiness and improved resistance to spring dead spot disease while matching or exceeding the quality of existing industry standards. Twenty-one thousand members of the golf course industry (members of GCSAA) received research-based information on new bermudagrasses having improved cold hardiness and resistance to spring dead spot disease. This programming was achieved through publication in the GCSAA magazine *Golf Course Management*. Service on the National Turfgrass Evaluation Program (NTEP) Policy Committee directly resulted in site-specific presentation of Turfgrass performance information, which will be more useful than a simple overall nation average. This site upgrade will help over twenty-two thousand visitors per year effectively select adapted turfgrasses for their specific use sites in North America.

Contact: Dennis Martin

Name of Planned Program/Activity: "Demonstration of a Sustainable Integrated Production System for Native Pecan and Beef Cattle Producers and its Effect on Ecology in Flood Prone Areas"

Progress Report: A comparison of native pecan and beef cattle double cropping in naturally flood or non flood prone sites with or without legume forage has completed its third year at two locations in Oklahoma and Arkansas. Average pecan yield exceeded 700 pounds per acre over four harvests from non-flooding plots regardless of grazing or forage treatment. Legume plots had the highest nut yield whether grazed or flooded. In the OK trial average beef gain exceeded 300 pounds per acre over three years on non-flood plots with native vegetation. In flood prone plots beef gain was highest on legume forage. In AR beef gain was highest on legume plots. Grazing reduced tree leaf N content by about 10% whether flooded or not. Un-grazed legumes met the total N requirements of the pecan trees.

Contact: Dean McCraw

Name of Planned Program/Activity: Demonstration of a Sustainable Integrated Production System for Native Pecan and Beef Cattle Producers and its Effect on Ecology in Flood Prone Areas.

Progress Report: In 2002, the multi-state pecan IPM team maintained and monitored two sites in flood prone areas of Oklahoma and Arkansas where pecans are grown. These sites were initially established in 1999 and baseline data gathered. Results have been presented to nearly 400 growers at various Pecan Grower meetings across the state and at national meetings. In addition, information was delivered to growers in Arkansas in April 2002. Data pertaining to several key

pecan pests have been gathered and most of that information is currently being analyzed. Information from these studies has appeared in regional popular magazines including Stockman's Grassland Farmer and Oklahoma Farmer Stockman. This information has also been presented at various meetings across the region.

Contact: Phil Mulder

Name of Planned Program/Activity: S-293: Improved Insect and Mite Pest Management Systems

Progress Report: Following the presentation of information developed for the National ESA meetings in San Diego, California the group has assembled the symposium into a publishable submission for the Southwestern Entomologist Journal. All individual manuscripts have been accepted for a special edition of this refereed journal that will focus on pecan insect pest management. Dr. Dutcher moderated the meetings and coordinated the assemblage of manuscripts. Drs. Harris, Mulder and Reid served as the editorial committee for review of these manuscripts.

Results of evaluations and tests conducted throughout the U.S. were shared among attendees. Cooperative tests between Oklahoma, Kansas and Texas were accepted for publication and dealt with the development and utility of new trapping technologies for pecan weevil. Dr. Mulder is first author of this manuscript that will be in print in 2003. Cooperative studies between Oklahoma, Louisiana and Texas continued in 2001. These studies focus on the phenology of phylloxera in native and improved cultivars and the use of a degree-day based system for predicting their prevalence in these areas. Three years of data have been assembled on this project and information from all test sites was presented at the Western Pecan Conference in Las Cruces, New Mexico and at the Oklahoma Pecan Growers Annual Meetings. Preparation of a manuscript is underway and should be submitted in 2003. Drs. Hall and Mulder will coauthor this effort. Finally, the group has also initiated another special symposium for the presentation at the 51st Annual meeting of the Southwestern Branch of the Entomological Society of America (SWB-ESA). This symposium was developed and arranged by Dr. Mulder who is currently serving as Secretary/Treasurer of the SWB-ESA. The meetings will be held in Oklahoma City in February 2003. The symposium is entitled “New Developments in Management of Pecan Nut Casebearer in Pecan.” The information exchange group will be meeting during the Branch meetings and have discussed the idea of publishing the papers from this symposium in another special edition.

Contact: Phil Mulder

Name of Planned Program/Activity: Developing an Integrated Pest Management Program in Grapes Used for Wine Production.

Progress Report: In 2002, the multi-state grape IPM team consisting of scientists from Oklahoma, Arkansas and Tennessee submitted two grants for funding by federal and state sources. So far, one of these grants has been eliminated and the other funded. The multi-state progress made on pest-management of wine grapes was developed primarily as an extension program with the University of Arkansas. In 2002, the IPM teams from Arkansas and Oklahoma educated nearly

100 growers from four states. This was conducted using a short course format of 6-8 meetings throughout the year and demonstrating proper scouting, management and treatment of pest problems in the perspective states. Growers were provided a hands-on opportunity at each class meeting in a local vineyard setting and exposed to several levels of operation management currently being used in the viticulture industry.

In 2002, besides the granting opportunities that were attempted, we also developed and have continued to develop several extension publications (fact sheets, scouting forms, picture guides, etc.) for use by growers in the third year of our grape school. Growers will be given the appropriate tools for monitoring pest populations in their perspective vineyards and contribute to the knowledge base of insect and disease prevalence in Oklahoma and Arkansas grapes.

Contact: Phil Mulder

Name of Planned Program/Activity: Joint Activity Between Two USDA Projects Due to Low Grain Inventories.

1. Area-Wide Grain Elevator IPM Marketing Model – Final full year

2. Developing sustainable stored grain IPM systems in Oklahoma and Texas –first year.

Progress Report: 2002 was the final full year of this Area-Wide study. Due to low wheat stocks at most elevators, the grain sampling team did some sampling of my Oklahoma grain elevator and farm cooperators on my USDA SARE project. I feel that samples taken from concrete silos in an annex where we have sealed the under-roof exterior vents, compared to adjacent silo annex where the exterior under-roof vents were not sealed will show dramatic differences in insect populations following fumigation – much lower insect populations in the sealed than the unsealed silos, which will result in fumigation failures in unsealed concrete silos.

This data, which will be studied more in-depth with a much larger wheat harvest in 2003, should provide a dramatic message for OK elevators (as well as elevators across the U.S. to seal concrete silo exterior vents. That will be a major impact. Bottom line, excellent fumigation with much less phosphine in sealed silos, improve grain safety while lowering fumigation costs by 2X to 4X, compared to fumigation failure or partial failure, even when using 2X to 4X more fumigant.

Other States Involved: Kansas in USDA Area-Wide; Texas on USDA SARE

Contact: Ron Noyes

Name of Planned Program/Activity: Developing Sustainable Stored Grain IPM Systems for Oklahoma and Texas

Progress Report: I met with each of the field coordinators for OK and TX soon after the project started in July 2002 and we visited each of the 12 sites. Due to the worst wheat harvest in OK and TX in 40-50 years, wheat prices were so high most of the sites moved their grain before October 1.

One OK farmer withdrew in September; I replaced him in November. Most of the storage sealing has been completed in OK and TX during the fall. Aeration controllers were designed in the fall and are now being assembled at BAE Lab, OSU. Suction aeration designs for one-flat storage and three concrete silo systems have been designed. The flat storage system was installed last summer, and orders for plumbing for two concrete systems in OK and TX are in process and will be delivered/installed this spring. Closed loop fumigation (CLF) plumbing designs for all sites are starting now. CLF and aeration controller equipment will be delivered and installed late this spring. One OK elevator is waiting until FY04 starts April 1 to see about installing suction aeration system. Very little grain sampling was possible in 2002 as most grain was sold by September. Tours/workshops may be conducted this fall or winter, depending on 2003 grain.

One good elevator silo annex (the one waiting till FY04) with under-roof vents sealed compared with an adjacent un-sealed silo annex will generate excellent data on insect kill during fumigation. CLF on the 10 sealed silos will have excellent kill with at least a 50% reduction in phosphine cost compared to only a partial kill when using conventional pellet dispenser fumigation of the 14 adjacent (in-line) unsealed silos. This data will make a great success story, even without CLF and suction cooling systems – just sealed silos is significant.

We also have monitored data from a large flat storage at Port of Catoosa that we will use in the program which compares **pellets** used in October 2000 in a partially sealed 3.3 million bushel flat to **tablets** used in October 2002 after the flat was re-sealed. Tablets release their gas much slower due to their 5X mass, which reduces the phosphine concentration peak and extends the fumigation by 2-3 more days due to lower leakage. This tablets vs pellets comparison (the mass of 1 tablet = 5 pellets) will provide an excellent SARE model.

Contact: Ronald T. Noyes

Name of Planned Program Activity: Greenbug Research Consortium

Progress Report: A joint meeting was held with the WRCC-66 on September 9-10 2002. I am currently serving as local arrangement coordinator, and treasurer. Approximately 30 people attended representing five states.

Contact: Tom A. Royer

Name of Planned Activity: Southwest Wheat Research and Education Consortium

Progress Report: Steering Committee Meeting was held on August 7. Planning for the Annual meeting, to be held March 11-12, 2003 at the Texas Agricultural Research and Extension Center in Vernon TX were formalized. Minutes of the SWREC meetings have been posted on our website at http://swrec.tamu.edu/.

Contact: Tom A. Royer

Name of Planned Activity: SR-IPM Grant, Grazing Winter Wheat for Pest Management

Progress Report: Dr. Emad Ismail was hired to coordinate the project. He has completed the second year of the study and presented results at the Annual Meeting of the Entomological Society of America. Results suggest that grazing effects greenbug numbers, and should be formally incorporated into greenbug management decisions. The work has been submitted for publication in a refereed journal.

Contact: Tom A. Royer

Name of Planned Activity: Area-wide Pest Management Initiative for Cereal Aphid Management

Progress Report: An area-wide Pest Management Initiative was funded for $2.5 million over 5 years. The USDA-ARS laboratory in Stillwater, Oklahoma generated the proposal. State partners include Colorado, Nebraska, Kansas, Oklahoma, Texas and Wyoming. The first organization meeting was held in Colby, Kansas on March 7-8, 2002 and chaired by Dr. Norm Elliott, Research Entomologist at the Plant Science and Water Conservation Research Laboratory in Stillwater. An additional meeting was held at the Annual Entomological Society of America Meetings in Ft. Lauderdale, FL on November 18, 2002. A postdoctoral Agricultural Economist has been hired, grower cooperators have been identified and have participated in a ½ day focus group discussion designed to help us identify their needs, concerns, and decision-making processes. Field plots have been established at all locations, and data has begun to be collected.

Contact: Tom A. Royer

Name of Planned Program/Activity: DairyLines Newsletter

Progress Report: Provided educational materials to Oklahoma and Kansas dairy producers, extension staff, and industry professionals on issues specific to the dairy industry. 10 issues were published in FY 2002

Contact: Daniel N. Waldner

Name of Planned Program/Activity: Western Dairy Management Conference

Progress Report: Developed program in cooperation with extension personnel from California, Texas, Kansas, Arizona, Oregon, Utah, Washington, New Mexico, Colorado, Idaho to provide education on issues specific to the needs of large western dairy herds and the industry personnel serving them. Conference to be held in Reno, NV, March 12-14, 2003

Contact: Daniel N. Waldner

Name of Planned Program/Activity: Heart of America Dairy Herd Improvement Association

Progress Report: Provided technical assistance in training DHIA field technicians and producers in the use and analysis of herd performance data. Conducted 7 educational meetings for HOA on heifer rearing in Kansas, Nebraska, Arkansas, North Dakota, South Dakota and Oklahoma.

Contact: Daniel N. Waldner

Name of Planned Program/Activity: Value determination alternatives for fed cattle

Progress Report: A survey of cattle feeders in four states (TX, KS, NE, IA) clearly indicated a shift to grid pricing and away from live weight pricing. Grid pricing involves a base price plus premiums and discounts for carcass characteristics of each carcass in the sale lot. Two key issues were addressed in this program. First, what alternatives exist for the base price in grids. Second, how can the premium-discount grids be made more efficient and effective at sending price signals for management decisionmaking. A report was prepared for presentation in March 2003 to the industry group funding the project.

Contact: Clement Ward

CSREES Goal 3: Multi-State Activities

Name of Planned Program/Activity: Evaluation of Weight Management Education on the Web by Consumers

Progress Report: This project is a collaborative effort with Kansas State University. This project is evaluating the use and acceptance of receiving weight management education on the OCES Nutrition Web Site by consumers. The OCES Nutrition Web page on weight management is in development and OSU IRB Human Subjects approval is underway. This activity ceased being multi-state as Kansas dropped out of the project.

Contact: Janice Hermann

CSREES Goal 4: Multi-State Activities

Name of Planned Program/Activity: National Advanced Resource Technology Center – USDA Forest Service, Marana, AZ

Progress Report: Provided a presentation and training course on maintenance and restoration of native plant communities with prescribed fire and prescribed grazing. This course is for all Federal natural resource agencies (FS, BLM, FWS) to equip them for ecosystem maintenance and restoration work as mandated by Federal Policy.

Other States Involved: All 50 states plus Guam and the Caribbean Islands

Contact: Terry Bidwell

Name of Planned Program/Activity: National Range Judging Contest – Judging Rangeland for Livestock and Wildlife Values

Progress Report: Conducted the national high school judging contest for 4-H and FFA students to learn about rangeland ecosystems and their management for livestock and wildlife. This contest is the culmination of numerous county, regional, and state contest conducted across the country.

Other States Involved: 37 states

Contact: Terry Bidwell

Name of Planned Program/Activity: Restoration of Lesser Prairie Chicken Habitat

Progress Report: Provided research information; trained state and federal agency personnel, and conducted meetings to improve landowner awareness on lesser prairie chicken habitat restoration. There are 3 demonstration sites in western Oklahoma devoted to this effort. One comprehensive publication was developed this year entitled Ecology and Management of the Lesser Prairie-Chicken, OSU Circular E-970.

Other States Involved: Texas, New Mexico, Colorado, and Kansas

Contact: Terry Bidwell

Name of Planned Program/Activity: Restoration of Greater Prairie Chicken Habitat

Progress Report: Provided research information on a new fire and grazing system for private landowners that restores greater prairie chicken habitat. Conducted five field days on three demonstration sites central and western Oklahoma. One comprehensive publication is being developed this year entitled Ecology and Management of the Greater Prairie-Chicken.

Other States Involved: Kansas

Contact: Terry Bidwell

Name of Planned Program/Activity: Sericea Lespedeza Working Group

Progress Report: Coordinated efforts for research and education efforts on control and management of sericea lespedeza. This is part of a national effort to address invasive species.

Other States Involved: Kansas, Missouri, and Arkansas

Contact: Terry Bidwell

Name of Planned Program/Activity: Black-tailed Prairie Dog State Working Group (part of the multi-state working group)

Progress Report: Provided assistance in preparing a management plan to improve the status of the black-tailed prairie dog and prevent it from being listed as a threatened or endangered species. This involves working closely with private landowners. The working group has completed an inventory of prairie dog towns and is in the process of evaluating the data.

Other States Involved: Texas, New Mexico, Colorado, Kansas, Nebraska, Wyoming, Montana, South Dakota, and North Dakota

Contact: Terry Bidwell

Name of Planned Program/Activity: 4-H Wonderwise

Progress Report: Oklahoma is part of the 10-state project 4-H Wonderwise project led by Nebraska and funded by NSF. I coordinated a two-day training that was attended by twenty-one Extension professionals and volunteers in January 2002. Additionally, over 50 volunteers were introduced to the program through one and two hour sessions at State and District Volunteer Conferences. I also ordered materials for participating counties and assembled kits of durable supplies for checkout by the District Offices. I also worked with Nebraska to include data from Oklahoma in the evaluation.

During summer 2002, Extension Educators implemented Wonderwise by incorporating it into 4-H camps, day camps and a variety of other programs. Science came alive for over 300 youth who participated in 4-H Wonderwise programs conducted by 16 Extension Educators in 2002. The Comanche, Cotton, Custer and Jefferson four-county camp provided 90 youth with information on four different topics, although most programs were shorter in length and focused on only one or two topics.

Although long-term impact of 4-H Wonderwise cannot yet be determined, most participants in Okfuskee County indicated that the programs made them think about science as a career with even more girls than boys indicating that they might consider a science career. Although several participants commented that they have always liked science, more than half of the respondents also indicated that the program changed their attitude about science.

Visibility for Cooperative Extension and science were an additional advantage of the programs. Most notable, the program received front-page coverage in Lawton where a reporter spent an entire day at the camp.

Eighteen additional counties are scheduled for training in spring 2003. Training is also planned for the 2003 State 4-H Leadership Conference.

Contact: Billie Chambers

Name of Planned Program/Activity: Youth Water Quality

Planned Activities for 2003: Contact was made with the Water Quality Coordinator from Arkansas at the National Water Quality Conference. Mitch Fram and I made plans to meet with Arkansas to explore collaborative efforts on youth water quality programming.

Contact: Billie Chambers

Name of Planned Program/Activity: Southern Region Pest Management Center

Progress Report: I represent Oklahoma at the Southern Region Pest Management Center that supplies EPA and USDA with pest management information for Oklahoma and adjoining states. The Southern Region comprises Oklahoma, Texas, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, North Carolina, South Carolina, Florida, Kentucky, and Virginia. We supplied an alfalfa crop profile to the Pest Management Center and are working on a joint watermelon crop profile with Texas. These items provide EPA with valuable information for the re-registration of pesticides. This program also supplies growers with updated information on label changes, use deletions, and pesticide cancellations.

Contact: Charles Luper

Name of Planned Program/Activity: IR-4 program

Progress Report: I represent Oklahoma in the IR-4 program that is a National Program to Clear Pest Control Agents for Minor uses. I work very closely with Texas, and Arkansas representatives to find pesticides that benefit our grower's common needs in our states at the IR-4 food use workshop. By combining similar needs with Texas and Arkansas this allows more products to be researched by IR-4 that could benefit Oklahoma, Texas, and Arkansas growers. We also work with other states that have similar minor use crops and those similar needs as Oklahoma. This multi-state cooperation can also occur with other states such as Georgia on Pecans and Peaches and Tennessee for Processing greens. Oklahoma submitted 49 Pesticide Clearance Reports to IR-4 headquarters in 2002.

Contact: Jim T Criswell

Name of Planned Program/Activity: Fumigation Programs

Progress Report: Oklahoma State University's (OSU) Pesticide Safety Education Program (PSEP) has worked with Missouri and Texas, in cooperation with OSU's Stored Product IPM team, to provide pesticide education programs on stored product fumigation. These efforts include working with the Missouri Cooperative Extension Service and Missouri Department of Agriculture in their certification and recertification programs for fumigation. We have worked with Texas A&M Extension and the High Plains GEAPS chapter to provide fumigation programming in Amarillo, TX. We have also worked with Great Plains Chemical to assist in their education program for their customers. We have worked with Roy Parker (Texas A&M) with his education programs in Gulf Coast area of Texas.

Over 250 applicators were in attendance at these meetings. They received updated information on the standard fumigant uses. They also received new information on how to better fumigate and the use of new fumigation methods such as the use of ECOFUME and Profume. IPM is included in all these programs.

Contact: Jim T Criswell

Name of Planned Program/Activity: Greenhouse/Nursery Manual

Progress Report: OSU Pesticide Education Safety Program (PSEP) worked in cooperation with Maine and Texas A&M to develop a greenhouse and nursery certification manual for Oklahoma applicators. This was a creation of a new certification category in the state.

Contact: Jim T Criswell

Name of Planned Program/Activity: Pesticide Regulation

Progress Report: I represent the American Association of Pesticide Educators on the State FIFRA, Issues, Research and Evaluation Group's (SFIREG) Pesticide & Operation Management Committee.

This committee discusses and addresses issues related to pesticide labels that directly affect pesticide applicators.

Contact: Jim T Criswell

Name of Planned Program/Activity: Interiorscape Manual

Progress Report: The Oklahoma Department of Agriculture, Food & Forestry created a new certification subcategory for Interiorscape pesticide use. Cooperating with Kansas, Michigan and Texas A&M, we developed a certification manual for use by commercial and non-commercial applicators.

Contact: Jim T Criswell

Name for Planned Program/Activity: Pinkston Education Facility for Structural and Urban Pest Control

Progress Report: The Pinkston Education Facility (PEF) has worked with Missouri and Kansas Departments of Agriculture, and the Oklahoma Department of Agriculture Food and Forestry (ODAFF) in developing educational materials for liquid termiticide application instruction. Applicators from Texas, Kansas, Missouri, Arkansas, and Oklahoma have attended the 2 ½ day school in Stillwater. Applicators learn minimum standards and proper liquid application techniques for subterranean termite treatments. Students also learn about the biology of termites

as well as nontraditional treatment methods. The instructors for this short course are ODAFF inspectors, industry representatives and OSU faculty and staff. PEF provides students access to many different construction examples and treatment problems. Students learn to identify six different types of floor slabs, different types of piers and voids as well as proper application techniques for pre and post-construction termiticide applications.

I work with and represent Oklahoma and Oklahoma State University at the Association of Structural Pest Control Regulatory Officials (ASPCRO) meetings and also the National Pest Management Association (NPMA) meetings.

Contact: Kevin Shelton

Name of Planned Program/Activity: Southern Region Information and Exchange Group – SRIPM.

Progress Report: I attended the annual meeting in Virginia. The working group acts to exchange information for on-going IPM programs and reviews the RFP and results from the USDA/CSREES Southern Region IPM grants program. Results of the reviews are submitted to the Directors, CES and AES for incorporation into future RFP's. Impacts: this working group determines scope and direction for the SRIPM grants program.

Contact: Jonathan V. Edelson

Name of Planned Program/Activity: Southern Region Water Resources Planning Committee

Progress Report: Smolen met twice and conferred numerous times on conference calls with the Southern Region Planning Committee: The Committee met for one day preceding the National Water Quality Conference in Boise, Idaho in March 2002 and for two days at the EPA Regional Office in Atlanta November 4-5. The Atlanta planning meeting provided an opportunity to coordinate programs with EPA and share program information. At the Atlanta meeting part of the time was used to begin planning for the 2003 Southern Region Water Quality Conference in Ruidoso, New Mexico. Representatives from 12 Southern Region states and New Mexico participated in both planning sessions, in Boise and Atlanta. Smolen met with Mark McFarland from Texas and EPA officials in Dallas, in June to discuss a liaison position between EPA Region 6 and five State Extension Services (Louisiana, Texas, Arkansas, Oklahoma, and New Mexico).

The Southern Region Project shared state and region program information with EPA at the EPA Ag Sector National Conference in November at Atlanta. Planning for the biennial Regional Water Quality Conference, scheduled for Ruidoso, New Mexico in October 2003, is on schedule.

Contact: Michael D. Smolen

Name of Planned Program/Activity: National Water Quality Leadership Committee and the Water Quality Committee for Shared Leadership.

Progress Report: Smolen helped plan and participated in the National Water Quality Coordinators Conference in Boise, Idaho March 9-13, 2003. This conference brought together representatives from 50 states and territories to help coordinate the National Water Quality Program and promoted the development of the Shared Leadership concept for CSREES and the state programs.

Shared Leadership planning continued at meetings in Washington, DC in May and Denver in August. Smolen presented the Shared Leadership concept with the USDA-CSREES Executive Council in June 2002.

Contact: Michael D. Smolen

Name of Planned Program/Activity: SERA-IEG-6 Soil, Plant, Water, and Waste Analysis

Progress Report: This group develops, modifies, and documents reference laboratory procedures, "regionalizes" soil test calibration/correlation and interpretation efforts among states that share similar soils and climate, and encourages both analytical proficiency and adequate quality control/quality assurance for nutrient analysis laboratories in the Southern Region of the United States. In June 2002, SERA-6 had its Annual Meeting in Athens, Georgia to exchange ideas, discuss common issues. I give a presentation on phosphorus risk index and TMDL. I was elected the secretary of the group. A number of other issues were discussed at the meeting and via list-serve. All those activities greatly enhanced the soil testing program in the southern region, e.g., more consistent results, shorter turn around time and more clientele satisfaction.

Contact: Hailin Zhang

Name of Planned Program/Activity: SERA-IEG-17 Minimizing Phosphorus Losses From Agriculture

Progress Report: The purposes of this committee are to develop best management practices (BMPs) to reduce agricultural P losses to surface waters by erosion and runoff (surface and subsurface), and to develop upper, environmentally-based, critical limits for soil test P and new soil testing methods that can more accurately identify sites where P loss will be of significant environmental concern. I attended its annual meeting in Fort Collins, CO in July 2002 to coordinate on going activities. This group established field and greenhouse P runoff study protocol and made significant contribution on P management to minimize the impact agriculture has on water quality. The group collectively commented on EPA's proposed CAFO regulation. The knowledge I gained from this activity group has been widely used in Oklahoma's waste management extension program and in developing a P risk index suitable to our soil conditions.

Contact: Hailin Zhang

Name of Planned Program/Activity: National Forage Test Association

Progress Report: National Forage Test Association promotes forage quality testing and certifies laboratories that provide forage test services. It impacts millions of forage and hay producers, users and brokers. I serve as director of the board to provide direction on forage quality analysis and the chairman of Electronic Communication Committee to coordinate the association's most important task. I attended all the quarterly board meetings maintained its webpage. Over 100 public and private labs were certified last year. This greatly improved those labs' analytical quality. Results were used for better ration management. I believe the association is continuously making significant contribution to the American feed and forage industry.

Contact: Hailin Zhang

Name of Planned Program/Activity: National Center for Manure and Animal Waste Management

Progress Report: Oklahoma State University is a member of several animal waste management related multi-state programs. I have been involving in most of the planned activities representing OSU. I worked with several scientists from other member institutions to prepare a white paper about the state of science of remediating nutrient loaded soils resulted from heavy manure application. I am also a lead author to develop an extension curriculum to certify manure operators. Many educational programs developed by the center and other multi-state initiatives have been disseminated to producers directly or to extension educators. Surveys and test results indicated that the awareness of water quality protection and nutrient management among our producers has been greatly increased.

Contact: Hailin Zhang

CSREES Goal 5: Multi-State Activities

Name of Planned Program/Activity: Economic Tools for Health Planning

Progress Report: Conducted rural health impact and budget workshops in eight states. Taught Extension and Office of Rural Health professionals the health impact model and health budget tools. Taught at two workshops sponsored by Southern Rural Development Center (Rural Health Workshop and Rural Development Workshop). I also presented material at nine state and regional meetings. I also participate on five regional and national committees.

Contact: Gerald A. Doeksen

Name of Planned Program/Activity: NE-167 - Family Businesses in Economically Vulnerable Communities

Progress Report: Data from second and third surveys are being analyzed. Team is close to finalizing work on the economically vulnerable index based on objective indicators as well as analyzing subjective data gathered in that area during the 3rd survey. Fourteen manuscripts and

presentations were completed during the last year. Currently 2 monographs are being developed for conferences that Baruch University will hold. The first conference is on home-based businesses and the second on women in business. I currently serve as chair of the group. For more information see 2002 annual report at: http://www.human.cornell.edu/ne167/

States Involved: AR, HI, IL, IN, IA, MN, MT, NY, ND, OH, OK, WI, Baruch University

Contact: Glenn Muske

Name of Planned Program/Activity: SRDC Value-Added conference

Progress Report: Held December, 2002.

States Involved: All 50 states invited

Contact: Glenn Muske

Name of Planned Program/Activity: Family Resource Management Via the Web

Progress Report: This web site was completely revised in 2002. Small updating continues. It continues to be used for in-service training. JOE article was published regarding the site.

States Involved: MT

Contact: Glenn Muske

Name of Planned Program/Activity: Great Plains Inter-Institutional Distance Education Alliance

Progress Report: The Great Plains Interactive Distance Education Alliance (GPIDEA) is a consortium of Human Sciences Colleges at ten universities. Students may pursue a degree offered by a single institution or multiple institutions. Each university brings a unique strength to the multi-institution academic programs. In a multi-institution program, a student is admitted at one institution and enrolls in courses at multiple institutions. Currently the Alliance is in its third year of offering a M.S. degree in Family Financial Planning. The FFP program provides an opportunity for Extension Educators to get their M.S. degree completely on-line in a CE-FCS priority area and eliminates travel costs and time. Other programs soon to be started are an M.S. degree in Gerontology, an M. S. degree in Youth Development, and classes supporting Home Economics Education programs. FFP program won two awards for its use of technology in education. States Involved: CO, IA, KS, MI, MT, NB, ND, OK, SD, TX

Contact: Glenn Muske

Name of Planned Program/Activity: 4HCCS Entrepreneurial curriculum

Progress Report: Work on curriculum development team for a 4-H Entrepreneurship program. Proposal has been funded by 4-HCCS with additional private funding being sought.

States Involved: WV, VA, FL, UT, MD, NC, MN, CSREES, OK, MO

Contact: Glenn Muske

Name of Planned Program or Activity: Kansas City Global 4-H Conference

Progress Report: This event was once planned and conducted by the Kansas City Chamber of Commerce. Over time the event declined and was near the point of being cancelled. A team of faculty and staff was identified with multi-state representation whose charge was to strengthen the education content of the event. The three-day event now features tours, workshops, service learning, and cultural events that prepare youth for future career opportunities. States Involved: Kansas, Oklahoma, Missouri, Arkansas, Nebraska, South Dakota, Texas, and Iowa

Contact: Charles Cox and Tracy Branch

Name of Planned Program or Activity: National 4-H Youth Congress

Progress Report: Through a rotational system all of the states have an opportunity to provide leadership to the planning, implementation and evaluation of this national event. In 2001 I served as the headquarters committee chair and assisted the new chair this year. I also attended the conference with our delegation and assisted the committee as needed. As a chair, I have been involved in the planning of the conference along with other staff and youth from other states. The conference in 2002 focused on Agricultural Science.

Contact: Charles Cox

Name of Planned Program of Activity: Scientific Focus in 4-H

Progress Report: A team of county and state staff for Oklahoma and Arkansas has been identified to work on the expansion of science and technology projects for youth in these two states. The team met face to face in April for a two-day brainstorming, planning and goal setting session. The goal is to expand the kind of experiences that 4-H members can obtain through 4-H that relate to areas of science and technology. A technology task force has been meeting for over a year in Oklahoma and has implemented a youth tech core that primarily works to expand technology literacy among both youth and adult audiences. The Oklahoma team has continued to expand and recently held a biotechnology conference for 23 youth at the Noble Foundation in Ardmore.

Contact: Charles Cox and Jeff Sallee

Name of Planned Program of Activity: National Collegiate 4-H Conference

Progress Report: Oklahoma State University, West Texas State A&M, and Texas Tech University planned and conducted the National Collegiate 4-H Conference in Ft. Worth. February 20-23, 2003. The conference focused on leadership development and community service. There were 32 total schools involved and 180 delegates attended.

Contact: Charles Cox, advisor

Name of Planned Program/Activity: Community Development Institute

Progress Report: This institute is sponsored by the Southern Rural Development Center and provides training to extension staff in the Southern region. About 40 educators from southern states participated in the weeklong training session held in September 2002 in Alabama. I served as a faculty member and made several presentations. Evaluations were very positive and demand for this training continues to be strong.

Contact: Mike D. Woods