# FY 2006 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, sensor-based technologies, animal health, commercial horticulture and alternative agriculture opportunities, turf production, meat goat production, organic production, climate and weather, cattle receiving and feeding, biosecurity and animal disease, 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 4,964 demonstrations, meetings and conferences were conducted during the year. OCES personnel in agriculture-related programs conducted an additional, 35,424 visits and consultations. These activities were attended by 281,754 participants during the year. In addition, 12.0% of these participants were identified as representing non-white, minority populations as compared to 6.7% of the state's farms operated by individuals representing these populations.

Drought and drought related management strategies took a prominent position in OCES programming over the past year. The drought resulted in reduced crop and forage production throughout many counties in the state. Drought caused costs of producing beef rose and many producers had to reduce herd numbers due to lack of forage. In addition, half a million acres were lost to wildfires in Oklahoma in 2006. Extension educators and specialists mobilized an informational drought relief effort that included county-wide meetings, media blitz, dedicated websites, poster presentations and brochures delivered to feed and seed stores, veterinary clinics, sale barns, and farm organization offices. Informational articles written for newspapers, newsletters, agricultural trade magazines (including the *Oklahoma Cowman*), radio stations, and the internet reached thousands of producers across the state. Drought mitigation materials were developed and distributed through various avenues. A “Drought Management” web site was constructed (http://dasnr2.dasnr.okstate.edu/drought/). This web site provides access to 42 drought management articles and other resources in the general areas of livestock production, crop production, economics and taxes, hay exchanges and current drought monitoring maps. Numerous management strategies were employed by producers based on this information. For example, reports from feed and fertilizer dealers confirm that producers purchased more by-product feeds than in the past few years indicating significant adoption of new feed technology, developed and extended by OCES specialists, provided to take the place of, or stretch, limited forage supplies. The two largest grain and feed brokers in Pontotoc County, Frontier Grain, and Heartland Grain increased their sales of byproduct feeds by 39% and 27% respectfully over the previous year. Increased fertilizer and seed sales (in spite of higher prices for each) confirm significant adoption

of the practices suggested to increase forage availability for livestock during the drought and afterwards.

Wheat is the crop with the highest gross receipts in Oklahoma. Over 5.8 million acres are planted. The largest purchased input for wheat farmers is usually nitrogen (N) fertilizer. By applying the N during the season, instead of preplant, the nitrogen use efficiency is improved, leading to decreased loss of N to the environment and improved profitability. The net economic benefit from in-season estimates of yield and topdressing all fertilizer N for grain production is estimated at $17/acre/year for the 31 years of data from the research trials. A relatively new program (in its third year) to take advantage of the sensor-based technologies developed through the Oklahoma Agricultural Experiment Station. Studies have shown that through use of hand-held sensors and Nitrogen-rich strips and RAMPS producers can more accurately estimate N needs for top dressing – resulting in an average savings of approximately $15 per acre (this research estimate resulted when fertilizer cost 65% of what it did in 2006). Over the last three years, training was conducted for 31 county agricultural educators, eight area specialists, twenty dealers/consultants, and 33 pilot producers. Each county educator and area specialist was supplied with a hand-held sensor for use in demonstration projects. These have served as the pilot program for a broader use of this technology. Over 900,000 acres are now involved in the project. Over the first two years, many of the producers showed savings in excess of those estimated from research (partly because their typical practices involved heavier use of nitrogen). However, even if the research-based figure of $15 per acre is used, the cost savings for the 2006-07 crop year would be in excess of $12 million.

Following fertilization, the highest cost factors in wheat production are traditionally application of pesticides (and losses resultant from weed species) and tillage. Both these management factors also have potential negative effects on the environment. OCES, in conjunction with the Oklahoma Agricultural Experiment Station, is in the fourth year of a pilot project to introduce winter tolerant Canola as a rotation crop with winter wheat in western Oklahoma. Canola grows much like wheat and is planted and harvested with the same equipment. Development of new varieties of winter Canola and management of the crop is part of a multi-state project between OCES, Oklahoma Agricultural Experiment Station, and the Kansas Agricultural Experiment Station. Demonstrations and conferences in Oklahoma in 2005-06 drew over 1,800 producers from Oklahoma and Kansas. Production in Oklahoma has grown from 60 acres four years ago 60,000 planted in 2005 for the 2006 crop. Acres planted in 2006 for the 2007 crop fell to something in excess of 20,000 due to the droughty conditions described above. Initial results show reductions in herbicide costs in wheat following canola as well as improved wheat yields in rotations following canola. Significant integrated research and extension effort have begun over the last two years to reduce the amount of tillage used in wheat production (as well as cotton and canola). Reduced tillage means more time for farm managers to put into other enterprises and/or increase the size of the operation. Recent higher fuel prices and lower rainfall have helped make newer minimum and no-till practices more desirable for some Oklahoma producers. In addition, new rotations like that mentioned above have helped reduce residual weed presence in no-till plots. Data show that conservation tillage went from less than 2% of the acres planted in Oklahoma in 1997 to about 14% in 2006.

Beef cattle production and management continues as one of the most significant major program areas. Cattle production comprises about 56% of the $4.7 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, and nutrition. The Oklahoma Master Cattleman Program is designed to enhance the biological and economic efficiency, as well as enhance the quality of life of beef cattle producers through comprehensive and consistent educational curriculum delivered locally. Directed at primarily small to moderate-sized cattle producers, over 150 educational programs were conducted in FY2006 resulting in 4,960 person-hours of instruction delivered. To date, over 600 producers have enrolled in Master Cattleman courses and with 313 graduates (including 161 in FY2006).

Meat goat production is a growing enterprise in Oklahoma. The first Oklahoma Meat Goat conference hosted by the Oklahoma Cooperative Extension Service was a huge success by any measurement. Over 350 individuals attended the conference. Attendees came from twelve states, including Hawaii, California, Montana, North Carolina, Tennessee, Colorado, Kansas, Missouri, Arkansas, South Dakota, Louisiana, Arkansas, and, yes, Oklahoma. Topics included fencing solutions, market characteristics and considerations (by a buyer for processing plants), goat nutrition and breeding, business management and marketing for meat goat enterprises, meat goat facilities and equipment, forage and browse management (lots of interest here, perhaps because of our drought), internal parasite evaluation and control, goat herd health and predator control, pharmaceuticals used in goats (prescription and OTC), and a producer panel discussion. For more information, go to the following website: http://oklagoats.com/default.aspx. Continuing efforts include a meat goat production and management tour and numerous county-level meetings and field days, in addition to the development and distribution of a meat goat production manual to be completed in 2007.

Several other continuing programs have been highlighted in previous annual reports. These include: the Oklahoma Quality Beef Network (OQBN) program designed to take advantage of items learned from the 1995 and 2000 Beef Quality Audits – over 25,000 head of cattle from more than 300 cattle operations were certified in the first five years of the program. Cattle buyers paid an average of $5.01 more per cwt for certified cattle. The higher price coupled with better gain due to preconditioning resulted in a gross increase in revenue of $88 per head and an average increase in net income (after all documented costs) of $24 per head. This is over $600,000 increased net income from these sales alone. In addition, many of the producers are using the same methods on all their cattle and thus able to get premiums on those as well. Pre OQBN survey indicated that 75% of the participants did not precondition prior to the program. This pilot project has been adopted by the industry within the state and is moving to being the standard practice for many progressive producers and livestock sales.

Wheat fields utilized for livestock grazing during the fall/winter and then harvested for grain by early summer are termed ‘dual-purpose’ wheat fields. Proper timing of livestock grazing termination at the ¼ inch First Hollow Stem (FHS) stage of growth is critical in avoiding large grain yield losses caused by overgrazing wheat pastures. Because grazing termination dates can vary greatly on a field-by-field basis due to planting date and the particular variety planted, FHS is the single best way for stocker cattle producers to determine exact times for grazing termination. Oklahoma has about 5.7 million acres of wheat planted annually, of which, about 2.5 million acres are utilized by farmers as ‘dual-purpose’ wheat acres. Research indicates overgrazing wheat pasture by just one week can result in a decreased grain yield of up to 25% at harvest and mistiming grazing termination by two weeks will reduce the bushels of wheat at harvest by up to 60%! Considering the 2006 Oklahoma harvest average was 32 bushel per acre yield and current futures markets offering $5 per bushel on new crop wheat for 2007 harvest, losing 60% of

potential yield equates into a 19 bushel loss at $5 or a $95 per acre loss of income for 'dual-purpose' wheat producers. A 2002 study indicated that about 30% of the producers applied FHS since this research first went to the field five years earlier. OCES has placed considerable emphasis on improving the adoption figure – including programming, newsletters, email alerts and weather modeling through Mesonet. OCES plans to conduct a survey to evaluate the adoption rate in 2007 (the second five years). However, even if the adoption rate hasn't changed and we look at the minimum loss of $40 per acre (one week) this effort should mean at least a $30 million gain in 2006 alone.

Forage and hay are extremely important to the state's cattle production. Quality improvement and testing programs assist producers generate high quality, safe and low cost hay. Due to the drought and related stressful conditions this past year, much of the sorghum hay was potentially hazardous to cattle. A long-standing pre-testing program for toxic nitrate levels in forage helped producers avoid potentially large cattle death losses. While avoiding potential losses are difficult to measure, a survey of producers in 2005 indicated a potential savings of over $11 million dollars of loss in just eight counties. This program is available is widely applied in about 60 of the state's counties with similar results.

Means to improve rural incomes through value-added, biobased product production has become a very high visibility set of programs for OCES and OAES. The rapidly emerging biofuels markets provide potential to add value to Oklahoma feed grains and increase the returns to farmers. OCES has assisted with several projects as they get planning and development grants and plan the potential operations. One project discussed last year has begun construction and is projected to have a $200 million economic impact during construction phase and the first three years of operation. OCES helped two other groups get a feasibility grants to look at oilseed processing and a biodiesel plants. These plants would support soybean, canola, peanut and related producers as well as the local 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. Total expenditures represented by programming and related support for this goal are approximately $10.8 million with $1.73 million from Smith Lever funds. About 96 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 1

**Key Theme – Adding Value to New and Old Agriculture Products**

**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, Food & Forestry (ODAFF-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 700 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 50 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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**Key Theme – Agricultural Profitability**

Title: OK Steer Feedout

**Issue:**
Information transfer between different segments of the beef industry is becoming much more commonplace and potentially more valuable. Beef cattle producers that can document improved post-weaning performance of their calves can potentially capture the added value at marketing. Key performance information would include, feedlot average daily gain, weaned calf health performance, carcass quality grade, carcass yield grade, and carcass value premiums. As beef producers utilize improved genetics in their herd, they often desire to verify superior calf crop performance. Without verification, the added calf value potential can often go un-captured. The

OK Steer Feedout is a vehicle that allows cow-calf producers, with small or large herds, to evaluate the performance of a sampling of their weaned calves and help assess the potential increased value due to feedlot performance or carcass merit.

**What Has Been Done:**
The OK Steer Feedout is an information feedback program for cow-calf producers that desire to learn more about the post-weaning performance of their calf crop. Objectives of the program include; 1) Data collection and reporting on the steers entered. 2) Assist producers with genetic change or improvement. 3) Benchmark the health status of calves produced. 4) Educate beef producers on the feedlot and meat industry, with emphasis on traits that add value.

The OK Steer Feedout was started in 1984 and has fed over 5000 steers representing over 40 different beef breeds and breed crosses. Over 333 ranches, many of which are multiple year consigners, from Oklahoma, Texas, Kansas, Missouri, Colorado, and Nebraska have utilized the program. The OK Steer Feedout consists of a fall born and spring born test with a 150 to 180 day feeding period followed by harvest in a commercial beef plant. To participate, ranchers deliver weaned steers, grouped in multiples of five head, to the host feedlot. The steers are processed, tagged and fed until harvest. The OK Steer Feedout committee oversees the feeding period, data collection, steer harvest, financial rectification and final data report. A booklet is produced with a comprehensive summary of each steer the producer entered and summary information from the current Feedout test. Educational programming is conducted in conjunction with the OK Steer Feedout.

**Impact:**
The fall born and spring born 2005-2006 OK Steer Feedout tested 185 steers from 14 beef breeds representing 24 Oklahoma, Texas, and Kansas ranches. The gross revenue of the carcasses marketed on a premium grid program through the Feedout was $173,277.50 for an average of $973.47 per head. A quality grade premium was paid on 74 carcasses and averaged $102.99 per head. A yield grade premium was paid on 117 carcasses and averaged $22.49 per head. The total of grid premiums paid was $2,862.59. Grid discounts are also identified to assist producers with cow culling or bull selection changes or both. The 2005-2006 Feedout included seven carcasses with a quality grade discount and two carcasses with a yield grade discount. The calculated per-head profit for steers fed in the Feedout ranged from a high of $253.73 to a low of -$307.15.

An educational program is held annually to review the current Feedout data and help producers apply the OK Steer Feedout information to their ranch. Over 60% of the ranches attended the 2006 wrap-up program, in addition to other interested beef producers. We distributed over 250 Feedout summary booklets to participating ranches, extension educators, breed associations and interested producers. Participating producers were given a digital photo of their steers before and after feeding, plus the digital image of the carcass rib eye cross-section.

Many producers use the OK Steer Feedout in consecutive years to measure genetic progress. As an example, one producer has had steers in each test since 1996 when he was breeding purebred exotic cattle. Steer gains and yield grades for this individual's cattle were generally acceptable but not uniform. He learned that there was much room for improvement in regard to carcass quality grade and overall consistency in his cattle. A cross breeding program was implemented on his ranch with bull selection based on Expected Progeny Differences (EPD) for relevant traits. In the 2005-2006 Feedout, his .75% English and .25% exotic steers maintained favorable yield grade

with improved gain and uniformity over earlier entries. Steers grading choice for this producer have increased 20 to 40 percent with more of the steers getting a quality grade premium. Another measure of progress is comparison with cattle in the Feedout from other ranches. In the first three years (1996 through 1998) this producer's cattle did not rank in the top five (individually or pen) for gain, carcass, or profit. In the last completed Feedout, he was the highest in each category. The producer participates in all educational events relating to the OK Steer Feedout and has encouraged numerous ranchers to become involved with OCES and the OK Steer Feedout.

An educational field day was held in 2006 in conjunction with the Feedout. We had 72 producers and extension educators attend the educational program on Quality Systems Assessment (QSA) programs, distiller's grains for cattle, and market outlook. A bus tour was held in 2005 in conjunction with the Feedout. The 48 producer's rode a chartered bus to Dodge City, Kansas and toured the Excel beef processing facility including both steer harvest and carcass fabrication. Seeing first-hand and gaining information about the beef processing business was a first for many of the producers that participated. Other tour stops included the Gardiner Angus Ranch and Ford County Feeders.

**Scope of Impact:** State Specific, some individual producer participation from neighboring states

**Funding:** State, Smith-Lever Act

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**Title: 2006 Drought Management Educational Program**

**Issue:**
Drought impacts not only full-time agricultural producers, but also part-time producers, and anyone who pursues agricultural interests out of doors. It can bankrupt some operations forcing those farmers and ranchers out of business altogether, to certainly causing others a great deal of financial and emotional stress, leading to tough decisions and oftentimes drastic measures to sustain their operations. With the research generated by the Oklahoma Agricultural Experiment Station, the Extension service was able to provide the information necessary in a timely and effective manner to help many producers manage their resources to their greatest advantage, including sustaining their operations throughout the drought, if that was their goal.

**What Has Been Done:**
Realizing the severity of the drought, as emphasized by the fact that half a million acres were lost to wildfires in Oklahoma in 2006, Extension educators and specialists mobilized an informational drought relief effort that included county-wide meetings, media blitz, dedicated websites, poster presentations and brochures delivered to feed and seed stores, veterinary clinics, sale barns, and farm organization offices, etc. Informational articles written for newspapers, newsletters, agricultural trade magazines (including the Oklahoma Cowman), radio stations, and the internet

reached thousands of producers across the state. In addition, to those efforts to directly benefit producers affected by the drought, state and area specialists conducted in-service training programs, Centra Symposiums over the internet, and developed written and electronic materials to keep county educators abreast of the drought situation, and the alternatives and options available to assist producers in their decision-making processes.

**Impact:**
The first efforts in the drought management educational program came in response to county requests to assist with a "Drought and Wildfire Management" meeting for producers in Seminole and Hughes counties who lost standing forage, and hay reserves due to wildfires. That meeting produced the "domino effect" that led to 14 more county producer meetings involving over 1,000 beef cattle and horse producers across southeast Oklahoma. Questions from producers at the meetings, phone calls, e-mail, and office visits emphasized the severity of the situation which indicated to us the desperate need they had for more sources of information. As a result we developed more creative avenues for disseminating the information such as the poster displays, tri-fold brochures, and dedicated websites to reach more producers. For example, the southeast area agent website registered 3658 hits during this time period, as well as the animal science website that registered 26,642 hits. Comments from producers and their county Extension educators indicate that they indeed used much of the information that was provided to them to help them manage their resources in such a manner that they were able to sustain their operations and remain on the farm or ranch. Collaborating reports from feed and fertilizer dealers confirms that producers have purchased more by-product feeds than in the past few years indicating significant adoption of new feed technology we provided to take the place of, or stretch, limited forage supplies. The two largest grain and feed brokers in Pontotoc County, Frontier Grain, and Heartland Grain increased their sales of byproduct feeds by 39% and 27% respectfully over the previous year. Increased fertilizer and seed sales (in spite of higher prices for each) confirm significant adoption of the practices suggested to increase forage availability for livestock during the drought and afterwards.

**Scope of Impact:** State-wide

**Funding Sources:** Smith-Lever, State

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**Title**: **Master Cattleman**

**Issue**:
Beef production accounts for approximately one-third of Oklahoma's agricultural production in most years. Moreover, seventy percent of the state's 86,000 farms have some cattle and over fifty

percent of the land area in OK is pasture or rangeland. Most of the cattle operations are small in size, with seventy-eight percent of the beef cow inventory in herds of fifty head or less. Smaller cattle operations have higher cost of production and are less likely to incorporate best management practices. The objective of this project is to enhance the biological and economic efficiency, as well as enhance the quality of life of beef cattle producers, through a comprehensive and consistent educational curriculum delivered locally.

**What Has Been Done:**
An interdisciplinary team of state specialists, area specialists and other professionals published a Beef Cattle Manual in spring 2004, which was updated and reprinted in fall 2005. The manual contains 40 chapters addressing various business, production, and natural resource topics. Approximately 7,500 manuals have been distributed through local Extension offices to date. A Master Cattleman program was developed using the Beef Cattle Manual as the primary reference. Learning modules including PowerPoint slides, lesson plans, a quiz and a quiz key were developed and made accessible to local educators and participants through the website, www.agecon.okstate.edu/cattleman.

USDA Risk Management Agency has partnered with Extension in funding the manual, educator in-service training, speaker travel and other educational resources. Extension educators coordinate meetings and provide instruction in cooperation with state and area specialists. To date, approximately 400 educational sessions have been conducted, with 150 of those held in 2006.

To become a "Master Cattleman", a producer must complete twenty eight hours of instruction and successfully complete the quiz associated with each learning module. More than 550 students have enrolled in the program and 313 have "graduated" to become Master Cattleman (approximately half of the graduations occurred in 2006). In August 2006, the first Master Cattleman Summit was held on campus with nearly 200 participants. The expected long-run impact of the Master cattleman program and associated education programs is that producers will have a better base for making decisions, improving financial and production performance and lowering (or reducing) risk.

**Impact**:
Along with the Oklahoma Beef Cattle Manual, OSU and OCES faculty and extension educators continue to offer a comprehensive educational program for beef producers, the OSU Master Cattleman program. Currently there are 26 active groups across the state with many extension educators and area specialists providing local leadership and training. The impacts of the program are perhaps best described by some of the comments from the participants:

- "Helps people who know very little about ranching from totally screwing up their operation."
- "Will have a positive impact on the quality of beef production in OK."
- "The book is a great reference source when I want to review a certain topic."
- "One of best manuals I have."
- "Helping new producers to learn more aspects of cattle business."
- "The best program OSU Extension Service has put out."
- "Solid core subject matter that is still important to long-time ranchers."
- "This program is designed to increase profit and improve the quality of the end product."
- "A very good program that helps us operate more efficiently."

- “Excellent update/refresher for experienced operators. Invaluable for someone new in business.”
- “We have learned so much and met other cattlemen. Better than a college ed.”
- “Excellent program, educational, dupes rumors and wives tales.”
- “Helped me get a foundation for raising beef and is a great contribution to OK's future.”
- “Learned about many aspects of cattle business; contacts for more info; meet others in business.”
- “Fantastic learning tool for anyone.”
- “Great program. It is well rounded and practical. I like the parts that explained the bottom line, P&L.”
- “Knowledge and excellent references material. Info which allows one to better manage my cattle.”

Likewise, the first Master Cattleman Summit is expected to benefit producers decision-making, both in the short and long run. Comments on evaluations included:

- “Immense, this has been very valuable. The biggest problem in this industry is a lack of education. In the cattle industry, we expect college level decision making from producers who may have never even been on campus. This meeting and program is an idea of a genius.”
- “Great crash course in what our product is and how it is marketed.”
- “Excellent information. Also it's good to look at long-term considerations for the industry as a whole.”
- “A very good learning experience.”
- “Very good information about new technical advances of tracking and managing cattle”
- “You guys are creative - Keep it up. This program was really good top to bottom.”
- “A great source of the latest information on cattle management. The speakers were excellent.”
- “Extremely informative. It came at a good time (drought and tough choices).”
- “Great, up to date information, interacts with institution experts and producers were wonderful.”
- “Excellent educational experience.”
- “Great concept. I enjoyed it all. Top quality presenters. The coming together with a common interest was fantastic.”
- “Overall program provided excellent info. Beef grading is area I need to follow up, give more info and apply to my herd”
- “Learned more about where the market is headed so I can make better decisions where my herd needs to be going.”
- “State producers coming together to meet with one purpose at hand - to learn.”
- “Help producers to network with others and see updates on cattle industry.”

**Figure 1. Locations of Master Cattleman Groups in Oklahoma**

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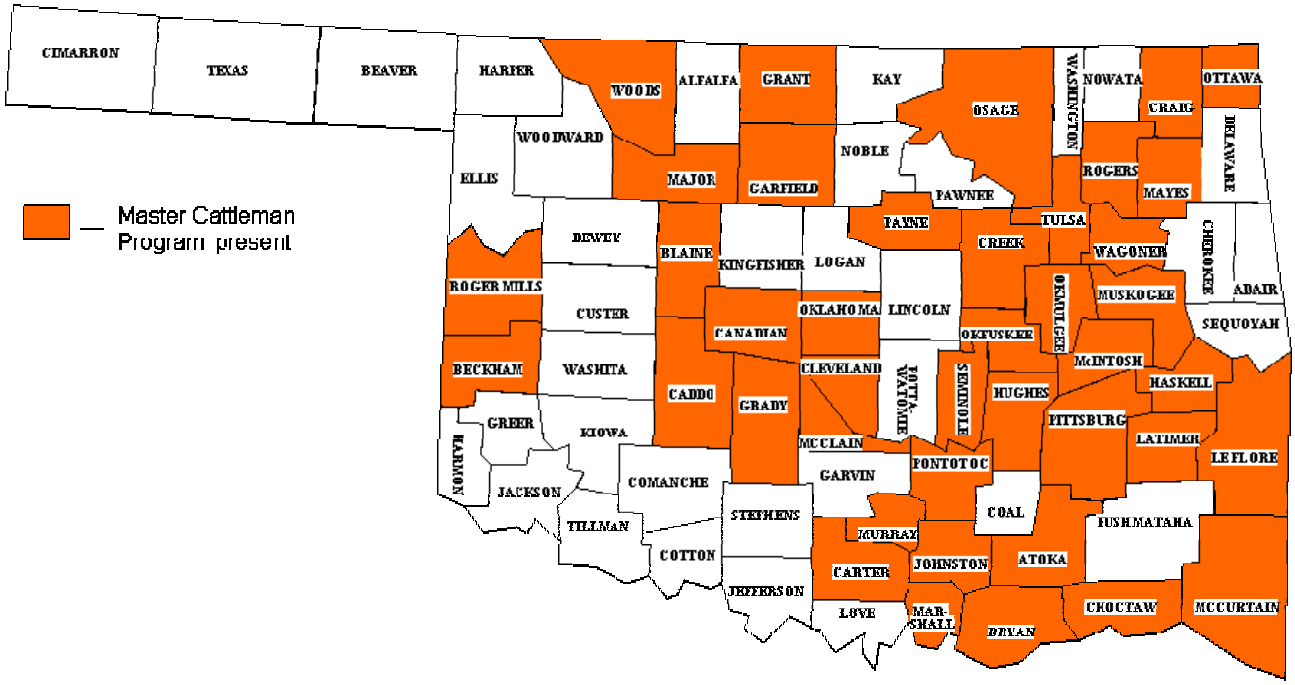


**Funding Source(s):** USDA Risk Management Agency, State, Smith-Lever

**Scope of Impact:** State Specific

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**Key Theme – Animal Production Efficiency**

**Title: Use of Electronic Identification and Remote Monitoring to Improve the Efficiency of Beef Cattle Operations**

**Issue:**

The largest push for integration of electronic technology into beef cattle production management has been the proposal of the National Animal Identification System (NAIS) as a disease management system. The current status of National Animal Identification System (NAIS) is a

federally voluntary system with some states making the program mandatory. Even with the voluntary status of NAIS in Oklahoma, much of the program is consistent with many of the Agricultural Marketing Systems approved Quality System Assessment (QSA) and Process Verified Programs (PVP) and requirements of Beef Export Verification (BEV) which focus on food safety, quality, and differentiation. These programs require information flow-though from the cow-calf producer to the retail market place. They also offer potential flow-back of information that may be valuable in making management decisions. Additionally, many new technologies are being developed that may aid in participation in the above programs and increase the efficiency of beef production and management. Despite being linked by the need to identify and manage information about animals or groups of animals, much confusion exists relating to the difference in these programs, the potential value they may have, and technologies that are available. The objectives of this project focus on use of marketing programs and technology to meet the requirements of NAIS, increase the efficiency of production and increase value of beef cattle.

**What Has Been Done:**
The current educational focus of this project has been to differentiate between the NAIS, marketing programs opportunities and electronic identification. Through educational presentations, development of the www.OKAnimalID.com web site, youth NAIS brochures, and adult NAIS information packets, cattle producers are receiving simple, factual information that aids understanding the differences between these topics and why they may be interested in participation.

The current research focus has been on the functionality of currently available electronic identifications and evaluation of emerging technologies that may have practical application. To date evaluations have determined that the currently available passive electronic tags have limitations in transferring complete information of groups of animals when individual restraining of each animal is not practical. Developing electronic tag technologies have been evaluated that can accurately identify all animals within a comparatively large reading range. However, we have determined that these technologies have difficulty in separation of groups of animals in close proximity.

This project also evaluated the efficacy of continuous remote temperature monitoring technologies. Initial work has shown that these technologies have the ability to detect both bacterial and viral health challenges. Indications are that these technologies offer promise to be come a valuable tool in managing the health of growing beef cattle.

**Impact:**
- Beef cattle producers now have simple, accurate information about the National Animal Identification System available which is being disseminated through:
    - Producer meetings and in-service trainings
    - www.OKAnimalID.com (1638 hits October-December 2006)
    - 35,000 Youth NAIS Brochures
    - 10,000 Adult Information Folders
- Assisting Oklahoma Department of Agriculture Food and Forestry has led to Oklahoma having the third largest number of premises registered in the country (5,806 premises registered).

- We have demonstrated that identification technologies being developed are able to rapidly and accurately record identifications from groups of animals at the speed of commerce and without restraint.
- We have demonstrated that remote temperature monitoring technologies have potential to identify animals experiencing a health challenge. Use of this technology can increase the reliability of health challenge detection and reduce labor resources required for health monitoring that has the potential to reduce the estimated $93.20 greater cost of production for calves that become ill than those never been determined to have a health challenge.
- Adaptation of remote monitoring technologies by 10% of the Oklahoma cattle feeding industry and technology reducing the increased cost of production associated with health challenges by 50% will increase returns to Oklahoma cattle feeders by $3.1 million.
- Adaptation of remote monitoring technologies by 10% of the US cattle feeding industry and technology reducing the increased cost of production associated with health challenges by 50% will increase returns to US cattle feeders by $219 million.

**Scope of Impact:** State Specific

**Sources of Funding:**
- OAES (State and Hatch)
- OCES (State and Smith Lever)
- Federal Crop Insurance Agency
- USDA/APHIS
- OCAST
- Oklahoma Department of Agriculture, Food and Forestry (USDA/APHIS)

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**Title: Tri-County Cattlemen's Program**

**Issue:**
Cattle producers in the Tri-County (Comanche, Stephens, and Jefferson Counties) area have over 265,000 head of cattle and calves according to the Oklahoma Agricultural Statistics Service. Of these, approximately 89,000 are beef cows. It is estimated that in excess of 170,000 head of calves are brought into this area from other parts of Oklahoma and other states to graze winter small grain forages. Cash receipts from livestock in Oklahoma total over $232 million, contributing significantly to the economy of the tri-county area.

Cow/calf producers must efficiently manage all available resources to improve beef cattle production efficiency and net return. Utilization of the OSU Master Cattleman program

curriculum material offers an opportunity to provide producers educational information on various areas of beef production.

Cow/calf cattle operators must manage health programs in order to minimize death loss and maintain acceptable animal performance. A growing body of research data indicates that the health status of a calf early in its life, impacts profitability by affecting performance throughout the feeding period and carcass quality. Stocker cattle operators are keenly aware of the relationship of good health management to profitability.

World export markets and USDA programs are forcing cattle producers to become familiar with new terminology such as electronic identification and trace back for disease tracking programs. Source and age verification are becoming increasingly important to export markets and may offer producers a way to add value to their production. Management issues for stocker operators grazing cattle on small grain forage are critically important to profitability.

**What Has Been Done:**
The Comanche, Stephens, and Jefferson county extension offices collaborated to host three hands-on producer meetings over a three week period focusing on beef quality assurance, electronic animal identification, and purchasing quality cattle.

The first program was a demonstration and discussion of improper injection site lesions from improper administration of injectable biologics or antimicrobial products and how they affect the quality and cost of beef. A chronically ill calf with multiple, previously administered, proper and improper injection sites was euthanized and used as the demonstration tool. Producers were allowed to visually examine the impact of injection technique and site selection on carcass quality.

The second program followed up with demonstrations on proper injection practices to follow. Cattle were used to demonstrate the proper locations and injection procedures to follow. These cattle were also tagged with RFID tags to demonstrate the use of different technologies available to producers. The technology also involved incorporated different record keeping techniques.

The final program allowed producers to visually inspect 3 different classes of live cattle directly from a sale barn. Price differences were discussed regarding their respective characteristics and what cattle buyers look for in today's cattle market.

**Impact:**
Thirty cattlemen representing the tri-county area attended all meetings. Producers completed a survey following the last program concerning the overall effectiveness and the impact of each program on their personal operation. Each program was well received and all producers responded with an increase of knowledge and will incorporate points of each program in their operation.

The impact from the tri-county cattle program could have a substantial impact on the tri-county area. The potential impact from following proper Beef Quality Assurance management and practices has been reported by the Beef Quality Audit of 2000 of $18.23 per head increase.

With the large number of stocker cattle in the tri-county area combined with the amount of cow/calf numbers, the impact of animal ID and source verification valued at $4.00/cwt above market price would allow producers an additional marketing option.

Educating beef producers on marketing and quality of cattle sold through markets has many positives on beef production in the area. Purchasing healthy, quality cattle that fit into each producer's program produces positive impacts on decrease medication costs, death loss, and increase gains without the added stress associated with poorer quality of cattle.

**Source of Funding:** County, State, Smith-Lever

**Scope of Impact:** State Specific

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**Title**: **Equine Production and Use**

**Issue**:
There are an estimated 326,000 head of horses in Oklahoma. Approximately 61,000 Oklahomans are reported to own horses, with about 120,000 participating in the industry as owners, family members and volunteers, or employees of horse industry enterprises in the state. Level of investment ranges from lows of several thousands of dollars in operating expenses per year for hobby interests to commercial enterprises that have investments in the millions of dollars. Production and use enterprises are typical agricultural small businesses with similar expenses and income as with other livestock species. Participants have needs to stay current on production and use practices that enhance their hobby participation and business income. Main areas of production and management programs to assist owners and managers relate to feed, land and facility management, and health.

**What Has Been Done:**
The largest single item of concern for 2006 has been nutrition management of horse herds during drought. The most commonly and frequently expressed need centered on forage and hay needs, alternatives and cost. Talks on the subject were given at two different county meetings, as part of one in-service to educators and at a state level producer meeting. The most frequent avenue of disseminating information was through personal contact with county educators and producers via email and phone. At the height if the concern in 2006, we received an estimated 10 to 15 phone calls a week for three to four weeks from horse producers needing advice on selecting an alternative to feeds that were not available or too costly. Similar number of emails and phone calls were received from educators with horse producing clients. Appropriate non-peered reviewed

informational articles were prepared and forwarded to educators, in addition to a related fact sheet on refeeding poorly conditioned horses.

**Impact**:
The practices encouraged and alternatives discussed to producers could conservatively decrease feed costs by 15 to 20 percent. Actual numbers of horses were not accounted for, although a conservative estimate of 3,000 head would be under the number of horses represented as owned at meetings or requests handled individually via personal contact during the height of activity. Feed costs per head vary tremendously based from one operation to another, conservative estimate of $750 per head per year for grain and hay. If practices were adhered to, an estimated savings of $45,000 resulted for those producers that actually attended meetings or were personally consulted by me during the height of activity. This estimate doesn't consider the actual total economic impact of efforts in this single area related to production and management, as the impact from work with county educators and mass communication efforts are unaccounted.

**Funding Source(s):** State, Smith-Lever

**Scope of Impact:** State Specific

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**Key Theme – Biofuels**

**Title: Oklahoma Sustainable Energy**

**Issues:**
Oklahoma grain producers continue to experience low profitability due to low prices and a lack of value-added alternatives. Rapidly emerging bio-fuels markets provide the potential to add value to Oklahoma feed grains and increase the returns of participating farmers.

**What Has Been Done:**
A group of Oklahoma feed grain producers had a vision to add value to Oklahoma feed grains through the development of a large scale ethanol facility in Oklahoma. Dr. Phil Kenkel, OSU Bill Fitzwater Cooperative Chair worked closely with the group during the feasibility study, organizational structure and business plan and he serves on the advisory board. The project which involves a unique partnership of agricultural producers and an energy industry partner is currently raising equity and expects to begin construction in the fall of 2006. The project will use approximately 19.7 million bushels of corn and sorghum converting the grain into 55 million gallons of fuel grade ethanol. The plant will also produce 176,000 tons of distillers grain and 147,000 tons of raw CO2 gas, both valuable by-products.

**Impact:**
The plant is projected to provide an attractive (> 30%) annual return on investment for its farmer/members while enhancing local feed grain markets. The distiller's grain byproducts will provide the protein needs for over 150,000 feeder cattle providing significant stimulus to Oklahoma's feedlot industry. The plant is projected to cost $70M with a workforce of approximately 35 full time employees. Economic impact during the construction phase and first three years of operations is projected to be over $200M.

**Scope of Impact:** Five hundred farmer investors located primarily in North Central Oklahoma.

**Source of Funding:** State, Grant, Smith-Lever

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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 several years. Interest has come from wineries, grape growers, and others 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. Potential exists for Oklahoma vineyards and wineries to add value to the Oklahoma economy by producing grapes and 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 seven times. The course meets seven times per year for a period of four hours. A comprehensive viticulture education program was also started, incorporating courses being taught at OSU-Stillwater, OSU-OKC, Tulsa Community College, and through OSU cooperative extension. Statewide meetings for grape growers have been held in various locations throughout Oklahoma involving almost 500 participants in 2006. A grape related newsletter was initiated in 2006, an Oklahoma Vineyard Management Guide was published electronically in 2005, and economic budgets have been prepared to assist potential grape growers with decision making.

Demonstration/research projects are on-going to secure reliable data on grape variety adaptability and pest management requirements in the various regions of Oklahoma. Competitive grant proposals have been submitted to various funding agencies including Integrated Pest Management (Oklahoma minigrant program), private foundations (Kerr Center for Sustainable Agriculture), and internal OSU funding opportunities (TIP, RIP, and OCES) to procure greater than $100,000 in funds.

**Impact:**
A recent industry survey has shown that since the Oklahoma Grape Management Course started OK grape acreage has increased from less than 50 to roughly 300 and the number of licensed wineries has increased from about 2 to 41, with 10 more planned to open in the next two years. Nearly 150,000 grape vines are currently planted, encompassing 33 counties. Over 400 people, including 13 county extension educators, have taken the Oklahoma Grape Management Course its first six years. Over 60 persons participated in the 2006 course. As a result of this educational program, potential grape growers from 50 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. The grape newsletter reaches 50 individual subscribers and is also available through the OSU Department of Horticulture and Landscape Architecture website as well as the Oklahoma Grape Growers' and Wine Makers' website. Data have been collected from research and 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; Smith-Lever

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**Key Theme – Emerging Infectious Diseases**

**Title: Monitoring Soybeans for Early Detection of Soybean Rust**

**Issue:**
Soybeans are an important row crop grown on about 300,000 acres each year in Oklahoma. Oklahoma is on the southern fringe of the soybean built and significant acreage (>2 million acres per state) are grown in each of the Great Plains states to the north. Soybean rust was first identified in the continental U.S. in the fall of 2004 and has since been deemed a national threat to soybean production. The rust fungus cannot over winter above the frost line. It survives on soybeans and alternate hosts along the gulf coast and moves northward over time during the

growing season. Because rust can reduce yields by 50% or more, fungicide applications are needed (and required by crop insurance) where rust develops. Rust is difficult to identify in the early stages and can be easily confused with other less damaging diseases, and timing of fungicide application is critical. For these reasons, there is a need for an early warning system to alert growers to the presence of rust in their production area. There is also a need to avoid needless application of fungicide on the vast acreages of this crop in the U.S. to protect profit margins and the environment.

**What Has Been Done:**
Monitoring (sentinel) plots were established in 15 locations in Oklahoma in 2006. Sentinel plot operators (County Ag Educators, Area Extension Specialists, OSU Research Station Superintendents) with early-maturing varieties on commercial farms and research stations. Operators sampled 100 leaves per week which were examined microscopically in the OSU Plant Disease and Insect Diagnostic for the presence or absence of soybean rust. Data one the presence or absence of soybean rust were uploaded weekly into the USDA Pest Information platform for extension and education (http://www.sbrusa.net/) which contained near real time maps of the distribution of soybean rust in the U.S.

**Impact**:
Soybean rust was not detected in Oklahoma in 2006. Nationally, the disease increased relatively slowly, but spread as far north as Indiana and as far west as Texas and Arkansas late in the season in 2006. Severe drought condition devastated Oklahoma's soybean crop and likely contributed to the probable absence of rust in the state. To our knowledge only about 125 acres of soybeans were sprayed with fungicide in 2006. Due to drought damage, we estimate that only about 75,000 acres had the yield potential to justify a fungicide application had rust developed. The impact of the monitoring program in Oklahoma was to save $15/A of fungicide and application costs on 74,880 acres or over $1.12 million.

**Scope of Impact:** Oklahoma and Midwestern U.S. soybean growing states

**Source of Funding:** Smith-Lever funds, North Central Soybean Research Program (through Univ. of Nebraska), USDA/CSREES (through So. Region IPM program)

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**Key Theme – Home Lawn and Gardening**

**Title: The Oklahoma Master Gardener Volunteer Program - 2006**

**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.

**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. 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.

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 hort 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. The Oklahoma Master Gardener Program now has 24 counties participating in the program as of January 2007. The following data was provided by 17 of the 24 counties. Approximately 240 new Master Gardeners were trained during the 2006 training season. Close to 1,000 active Master Gardeners volunteered their time, contributing approximately 56,870 hours of volunteer service and reaching over 131,039 Oklahomans with as many as 400+ educational and community programs and activities being conducted in their communities in 2006. This translates to over $2,411,000 in service that was donated by volunteers (wage rate of $18.04/hour was used, which includes a 12% estimate of fringe benefits. This hourly rate is the assigned wage for nonagricultural workers in 2002 as published in the *Economic Report of the President* (2003 edition). The Independent Sector, an organization that "serves as a national forum to encourage giving, volunteering and not-for-profit initiative," supplied this information).

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

**Scope of Impact:** The Oklahoma Master Gardener volunteer program is "state specific;" however, continued training opportunities may be multi-state, regional or national.

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**Key Theme – Invasive Species**

**Title: Wild Oat Control in Winter Wheat**

**Issue:**
Wild Oats (Avena fatua) present a significant seed pressure in wheat fields in Jackson County in Southwest Oklahoma. The competition for moisture and nutrients in an area with limited rainfall becomes critical. Suppression and/or potential control of this weed species is possible with the use of herbicides or through the use of crop rotations. The primary crop management strategy for the majority of wheat producers in Jackson County is to grow a crop for both forage and grain production. Therefore identifying herbicides that will function in this management strategy is of prime importance to producers.

**What Has Been Done:**
This project is an ongoing long term effort to continually evaluate commercially available herbicides and new potential herbicides for their suppression and/or control effectiveness in wheat production systems. Extension/Research demonstration plots have been established in the county on local producers since 2000. Each year a selection of herbicides are chosen and placed into replicated study blocks. Either one or two study blocks are established in the year depending on location availability.

**Impact:**
Jackson County's wheat acres comprise the largest acreage crop in the county with approximately 200,000 acres. Of these 200,000 acres, approximately 150-175,000 acres are harvested annually with an average production of 30 bushels per acre. Since the beginning of this project approximately 13 field tours have been conducted, 10 crop production meetings, 12 demonstration blocks established, over 400 county producers attending these meetings, 2 surveys, 9 county publications, numerous press publications (newspaper has an ~ 5800 subscribers and the radio has a listening audience of ~ 50,000), identification of economical and successful chemical product, and the recognition of the county extension office as a resource and expertise site for information related to this topic. Annual sponsored spring pre-harvest wheat field tours are also conducted in conjunction with these plots. Effective chemicals identified in this project represent anywhere from a $1-4 potential savings (chemical cost only) on a per acre basis with dockage savings also noted, due to a cleaner product, ranging anywhere from $0.25 – 0.75 per acre

**Source of Funding:** County, State, Smith-Lever, Oklahoma Wheat Growers Assn.

**Scope of Impact:** County and Area

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**Key Theme – Niche Market**

**Title: Caddo County Farmers Market**

**Issue:**
A county-wide farmers market in Caddo County was needed. The program began in 2005 and was held again in 2006. Although Caddo County is one of the largest vegetable producing counties in Oklahoma, a local market for vegetable producers did not exist. Also, local residents did not have access to locally produced fresh fruit and vegetables.

**What Has Been Done:**
First, the Caddo County Fair Board was approached in March of 2005 to see if they would sponsor a county-wide farmers market to provide a meeting place, market location, and partner with the Caddo County OSU Extension's efforts. As we began the second year of the farmers market in March of 2006, Farm Credit of Central Oklahoma volunteered to sponsor the event. The market was held of their property and they donated a sign and assisted with cost of advertising. The market length was expanded from 6 weeks to 8 weeks.

**Impact:**
Public support has continued to be very strong over 600 people attended the farmers market during the 8 weeks. Although only 3 vendors participated the first year, the market has expanded to 5 vendors in 2006 and they provided plenty of produce for their customers. An estimated $7,000 of produce was sold during the trial year. But more importantly a precedent was set: 1) Local producers have been made aware that the farmers market will be held in 2007 so that plans to plant vegetables can be made. 2) Residents have been made aware of the quality of locally produced fresh vegetables. 3) The promotion of healthy foods was made and the improved taste of fresh vegetables was demonstrated to many urban consumers.

**Funding Sources:** County, State, Smith-Lever

**Scope of Impact:** State Specific

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**Key Theme – Plant Health**

**Title: Testing Wheat Produced in Oklahoma for the presence of Karnal Bunt**

**Issue:**
Karnal bunt (KB), which is caused by *Tilletia indica*, is a fungal disease of wheat that causes minor problems with the quality of flour milled from KB-infected wheat. However, presence of KB in wheat grain can cause significant problems if found in wheat because many of the countries to which wheat is exported from the U.S. have a zero tolerance for KB. Hence, wheat produced in the U.S. must be tested for the presence of KB in order to obtain a phytosanitary certificate stating that the wheat was produced in an area not known to be infested with KB. This phytosanitary certificate satisfies the requirement of U.S. wheat trading partners and allows wheat produced in a state like Oklahoma to flow freely into the export market.

**What Has Been Done:**
During harvest, wheat grain is collected from elevators in about half of the counties of Oklahoma where at least 1 million bushels of wheat are produced at the rate of one sample per 1 million bushels. In the next year, the other half of the counties is sampled. Personnel from the Oklahoma Department of Agriculture, Food and Forestry collect these samples and deliver them to the Department of Entomology and Plant Pathology at Oklahoma State University. These grain samples are washed, with the resulting washing passed through specific sieves to isolate in a pellet all particles between 20-50µ. This pellet is then suspended in liquid, spread onto microscope slides, and examined for the presence of KB spores. If suspect spores are found, the grain sample is examined for bunted kernels. If bunted kernels are found, the sample is forwarded to scientists with USDA-APHIS-PPQ for positive identification. Since 1996, wheat produced in Oklahoma has been tested for the presence of Karnal bunt.

**Impact(s):**
Since 1996, 1,752 samples have been tested with 65 being tested in 2006. Results from these tests are entered into a data base through the National Agriculture Pest Information System (NAPIS), and are used by the USDA-APHIS-PPQ to issue phytosanitary certificates that allow the wheat to move freely into the export market. Slightly more than half of the wheat produced in Oklahoma typically moves into the export market, so such testing is vital to continue to insure the free movement of this wheat.

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

**Scope of Impact:** State specific with national implications.

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**Title: Agricultural Testing in Oklahoma**

**Issue:**
Agricultural testing is needed by all producers to improve their profits and by extension personnel to enhance their educational effectiveness. For example, soil testing has been proven to be one of the most important Best Management Practices (BMP) to improve nutrient use efficiency. However, many producers routinely fertilize their fields without testing the soil. It is possible to apply unneeded fertilizer or animal manure if the nutrient status of cropland or pasture is unknown. This not only costs producers money, but the additional nutrients may enter water supplies and cause environmental problems. On the other hand, applying inadequate fertilizer could reduce yields and decrease profits. One of the major reasons for farmers not performing soil and other agricultural tests is the lack of understanding of their importance or the lack of confidence in test results.

**What Has Been Done:**
The Soil, Water and Forage Analytical Laboratory has expended its service to include animal waste/compost and greenhouse growth media tests. More than 2000 waste samples were analyzed annually. This is a significant contribution Oklahoma livestock and poultry industries, since most of their operations are required by law to have a manure test. Over 55,000 agricultural samples were analyzed in 2006 for thousands of farmers, ranchers, and homeowners in a timely fashion. Farmers and homeowners use those results to guide their fertilizer application. Extension educators used the information we provided for their programs.

**Impact:**
Each year, we directly serve thousands urban and rural clientele and millions of acres of land are impacted. Test results are used by producers to formulate their fertilizer program, especially to develop animal waste management plans. Our timely soil testing and manure analyses have facilitated the waste nutrient management plan development for poultry producers and other animal feeding operations (AFOs) mandated by state and federal regulations. The recommendations from the lab have increased nutrient use efficiency; therefore, the yields of crop production for producers who use soil testing should be improved while the costs of fertilizer use decrease. Soil test has proven to save $5 to $15/acre in nitrogen cost by crediting residual nitrate nitrogen. The impact of agriculture on the environment as a non-point source should also be greatly reduced by following soil test recommendations and applying the right amount of nutrients at the right time.

**Scope of Impact:** Statewide

**Source of Funding:** Fee generated, State and Smith-Lever

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**Key Theme – Plant Production Efficiency**

**Title: Discovery about First Hollow Stem in Minimum-Till Winter Wheat**

**Issue:**
Wheat fields utilized for livestock grazing during the fall/winter and then harvested for grain by early summer are termed 'dual-purpose' wheat fields. Proper timing of livestock grazing termination at the ¼ inch First Hollow Stem (FHS) stage of growth is critical in avoiding large grain yield losses caused by overgrazing wheat pastures. Because grazing termination dates can vary greatly on a field-by-field basis due to planting date and the particular variety planted, FHS is the single best way for stocker cattle producers to determine exact times for grazing termination. Oklahoma has about 5.7 million acres of wheat planted annually, of which, about 2.5 million acres are utilized by farmers as 'dual-purpose' wheat acres.

**What Has Been Done:**
Research indicates overgrazing wheat pasture by just one week can result in a decreased grain yield of up to 25% at harvest and mistiming grazing termination by two weeks will reduce the bushels of wheat at harvest by up to 60%! Considering the 2006 Oklahoma harvest average was 32 bushel per acre yield and current futures markets offering $5 per bushel on new crop wheat for 2007 harvest, losing 60% of potential yield equates into a 19 bushel loss at $5 or a **$95 per acre loss** of income for 'dual-purpose' wheat producers.

A 2006 On-farm Case Study being conducted on a Canadian County farmer's operation revealed a previously unknown variance in the onset of ¼ inch FHS stage of growth for identical wheat varieties planted on the same day based strictly on tillage method used. The study identified differences of about a week in the development of ¼ inch FHS stage of growth across all 20 wheat varieties being grown under two tillage methods: no-till versus conventional tillage. Conventionally grown wheat varieties consistently exhibited ¼ inch FHS stage of growth one week earlier than identical wheat varieties planted in a no-till cropping system. This one week divergence based solely on tillage system is enough to rewrite the way FHS is used by farmers and ranchers to determine grazing termination dates for 'dual-purpose' wheat.

Previous recommendations for grazing termination have been made without distinction between conventional and no-till cropping systems. However, knowledge gained from this SARE Grant On-farm Case Study has changed the way crop consultants will make recommendations concerning grazing termination dates for 'dual-purpose' wheat. Future grazing termination recommendations will be ascertained with credence given to the type of tillage system being utilized instead of simply making blanket decisions regarding the removal of grazing livestock from 'dual-purpose' wheat.

**Impact(s):**
According to Dr. Jeff Edwards, OSU Extension Small Grains Specialist, "The delay in the onset of FHS in our no-till plots at El Reno is interesting, to say the least. When we initiated these no-till vs. conventional till plots our working hypothesis was that there would be no difference in development of FHS between the conventional till and no-till variety plots. According to the results of this study's preliminary data that hypothesis was wrong. Our no-till plots are about one week behind the conventional till plots in terms of FHS. The most plausible reason for a delayed development is likely cooler soil temperatures in our no-till plots. We intend to continue this On-farm Case Study work for several years to see if this trend is a one-hit wonder or if it continues to hold true."

With 2.5 million acres of winter wheat being grazed in Oklahoma, the economic impact of $95 per acre loss in potential wheat producer income quickly translates into a $238 million loss to the state's economy. The number of no-till wheat acres in Oklahoma is rising exponentially due to high energy prices forcing wheat producers to adopt minimum tillage cropping systems. As more acres move into no-till production, it is imperative that wheat growers get their grazing termination dates correct for maximum bushels of grain production per acre, while at the same time not leaving income from livestock gain in the field by terminating livestock grazing prematurely.

**Funding:** Sustainable Agriculture and Renewable Energy Grant, Oklahoma Wheat Commission, Smith Lever, State of Oklahoma and the County Commissioners of Canadian County

**Scope of Impact:** State of Oklahoma and National Implications

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**Key Theme – Precision Agriculture**

**Title: Sensor-based Nitrogen Recommendations**

**Issue:**
Nitrogen fertilizer is expensive, yet most wheat farmers in the southern Great Plains employ tradition-based nitrogen fertilization practices. That is, they fertilize the same way they always have, regardless of crop condition, nitrogen mineralization, or crop yield potential. This results in reduced profitability for the farmer, increased environmental impact, and inefficient allocation of fossil fuel resources. Skyrocketing nitrogen fertilizer prices, however, has increased the interest among farmers in implementing new technologies to reduce nitrogen fertilizer use. Further, increased public awareness of off-site movement of nitrate nitrogen has dictated that agricultural producers become more efficient when using nitrogen fertilizer.

**What Has Been Done:**
A research-based methodology for sensor-based nitrogen recommendations was developed by research staff at Oklahoma State University. This technique provided farmers with a long-needed tool to provide in-season assessment of crop nitrogen needs, which would result in greater nitrogen use efficiency and reduced total crop nitrogen inputs. Initially extension efforts consisted of the traditional avenues for information delivery such as grower meetings and fact sheets. This approach achieved the goal of grower awareness but was not as effective at addressing grower apathy or achieving goals of implementation. Grower apathy was remedied by high nitrogen fertilizer prices. Workshops were conducted in 2005 and 2006 in order to increase on-farm implementation of the sensor-based nitrogen recommendations program. These workshops used the novel approach of training farmer/extension educator pairs in the use of sensor-based nitrogen recommendations and equipping these same individuals with hand-held sensors necessary to

measure crop nitrogen needs.

**Impact:**
Since our first workshop in 2005 we have trained 36 farmer/extension educator pairs and numerous fertilizer industry professionals in the use of sensor-based nitrogen recommendations. Using this train-the-trainers approach we anticipated a significant multiplier effect, and, based on preliminary observations, we seem to be making significant headway. For example, one fertilizer dealer in attendance at our January 2005 meeting provided sensor-based nitrogen recommendations as a free service to their clients on over 600 fields in the 2005/2006 crop year. Based on historical data, improving the validity of wheat nitrogen recommendations in the state of Oklahoma would save producers $12 to $15 per acre on an annual basis. This equates a potential of roughly $90 million that can be saved by stakeholders on an annual basis. Therefore, since the potential payoff is great, we will continue to work on changing the wheat fertilization behaviors of growers.

**Funding Sources:** State; Smith-Lever; Oklahoma Wheat Commission

**Scope of Impact:** Southern Great Plains wheat production area (Oklahoma, southern Kansas, Texas, southeastern Colorado, and eastern New Mexico)

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**Key Theme – Precision Agriculture**

**Title: Sensor Based Technology**

**Issue:**
Over use of nitrogen as a fertilizer source costs the industry millions of dollars each year. In addition to the monetary losses, we as industry leaders must also focus on the environmental hazards the effects of this wasted nitrogen has on our precious natural resources.

**What Has Been Done:**
The answer to the problem is to devise a system to efficiently measure the amount of available existing nitrogen and make recommendations to the producer on the amount of nitrogen needed to produce a specific yield goal. In the past the producer has top dressed using the old adage; we've always put down this amount and that's what we're going to do again this year.

OSU has answered the call by developing a sensor based system to accurately measure the biomass of a given forage and calculate the required top dress to achieve desired yield goals. Dr Randy Taylor and staff have shown themselves to industry leaders in the ___ areas of sensor based nitrogen technology. They have worked tirelessly on developing this system and have

trained numerous educators in the state so that an economic impact can be made in their home counties.

**Impact:**
With almost 600 N-Ramp sites in the state and 10 in Harper County the stage for economic impact has been set. For the first week of March liquid nitrogen cost averaged $.48 per pound of nitrogen. If one calculates that the sensor based technology tells the producer he needs 20# of nitrogen/acre and traditional top dress practices have been to use 40# of nitrogen/acre on 160 acres of wheat the producer will save $1,536 on his 160 acres of wheat ground. That is an impact. These kinds of numbers are the kind to gather tremendous producer interest and generate future support for OSU and OSU Extension.

**Scope of Impact:** State wide

**Source of Funding:** County, State, Smith-Lever

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**Key Theme – Risk Management**

**Title: Risk Management Education for Specialty Livestock Producers**

**Issue:**
An increased demand for goats and goat meat has triggered a growing popularity of raising goats in Oklahoma. Producers need assistance in realistically evaluating financial prospects of alternative enterprises and in identifying cost effective ways of producing such commodities. Enterprise budgets offer valuable decision support in analyzing profit potential while documenting resources, cultural practices, and technology used in the production activity. Knowledge of budgets and the ability to use them will assist producers with farm and financial planning.

**What Has Been Done:**
Meat and stocker goat enterprise software templates were released to the public in February and August 2006 respectively. Since the original release, over 100 producers were directly contacted via software presentations and displays. Additional contacts were made through individual visits, professional and paraprofessional trainings, direct mailings, and popular press articles. Interested parties including producers and agricultural lenders have purchased the software. Langston University has provided joint authorship of budget assumptions and data collection. A collaborative farm management guide publication with Kansas State University was released in October 2006 (Stocker Goats in Eastern Kansas, MF-2599). An economics chapter was developed for Langston University's web-based training and certification program for meat goat producers. A related Meat Goat Manual published by Langston University will be released to the public in 2007.

**Impacts:**
Software demonstration will be available during Langston University's Goat Field Day in April 2007. A follow-up series of "hands-on" computer workshops and/or seminars maybe conducted with the expected outcome of improved profitability through improved farm and financial skills. Software promotional efforts will be targeted to interested and existing goat producers around the state. Evaluation will consist of attendance and information requests plus pre-and post surveys to measure knowledge skills or behavior before and after participation/purchase. An estimated 100 goat producers are expected to be contacted directly via educational settings.

Although goat production is less expensive per budget unit than a typical beef cattle operation, parasite management, predator control, and fencing do present challenges. Through better financial management and production performance, average improvement in annual net farm income of at least $500-1000 per producer ($50,000-$100,000 total) is expected.

**Funding Sources:** State, Smith-Lever

**Scope of Impact:** State Specific

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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, handling of fresh produce, food preservation, HACCP Training, and microbiological testing. During the year, 128 demonstrations, meetings and conferences were conducted under this goal. Participants numbering 18,385 attended these activities during the year. OCES personnel conducted an additional, 642 visits and consultations with these audiences. Mass media contacts totaled over 1.1 million.

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 (FAPC) 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 “Sanitation Standard Operating Procedures”, “Recall and Trace”, “Allergen”, “Pest Control, "Master Canners Workshop", and “Microbiological Testing”. 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.

The FAPC started a new program in FY2005 aimed at processors and handlers of fresh produce. The program provided education and technical assistance food safety practices for production and post-harvest handling of fresh produce. County educators in Oklahoma were trained in accordance with FDA procedures and six workshops for over 220 producers were conducted in the state.

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, food security and first responder training, 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 $900 thousand with $100 thousand from Smith Lever funds. About 6 professional and paraprofessional FTEs contributed to the goal last year. As noted above, due to the categorization of Key Themes by CSREES, closely 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.

## 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, 3,254 demonstrations, meetings and conferences were conducted under this goal. OCES personnel conducted an additional, 9,241 visits and consultations. All these activities resulted in reaching more than 163,131 participants during the year. Approximately 20.8% contacts were with non-white audiences compared to 26.0% in the general population of Oklahoma.

Healthy living programs continue as a major focus of extension education in Oklahoma. These programs target dietary and health practices designed to reduce diet related conditions such as:

heart disease, stroke, diabetes, and others. These programs touch a wide variety of clientele. Surveys have shown significant improvement in intake of fruits and vegetables, as well as improved safe handling of foods. 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 thousands of 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. CNEP impacted 5,318 low income families during FY2006. Of the adult graduates, 91% demonstrated a positive change toward a healthy diet and 43% of the participants indicated they ran out of food less often. The programs also reached 16,189 qualified youth with direct information programs. Cost-Benefit analyses from across the national show that for every dollar invested in nutrition education, between $3.63 and $10.64 is saved in future health care costs. The gains primarily come from decreases in nutrition-related illnesses resulting in lower medical costs and an increase in worker productivity (fewer sick days).

In Oklahoma, 56% of adults are overweight and 21.9% are obese. The proportion of overweight children has tripled since 1980. In Oklahoma, 11.1% of youth are obese. Cooking with Kids, Healthy Kids-Healthy Futures, New Community Project, Dairy is Dynamite, and Fitness U and Nutrition (FUN) are just some of the programs OCES is employing to address the problem from a children and youth perspective. The overall goal is to empower youth to make healthy choices in their everyday living that will attribute to a lifetime of healthy living. Broader programs such as Healthy Oklahoma and Spread the News provide nutrition and healthly living information and education for adults as well. Outcomes and impacts include increased intake of fruits and vegetables, increased levels of exercise and physical fitness, increased consumption of milk, and dairy products, and better food safety and food handling techniques.

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. Numerous communities have worked with OCES to maintain health care or add to health care facilities. 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 $5.0 million with $1.3 million from Smith Lever and other federal funds. About 49 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

**Key Theme – Human Nutrition**

**Title: Community Nutrition Education Programs (CNEP)**

**Issue:**
The number of Oklahomans living below the poverty level exceeds the national average. The prevalence of low socio-economics status is associated with poor nutrition habits that contribute to chronic disease including heart disease, cancer, stroke, and obesity (OSDH). This is substantiated by research conducted in Oklahoma of food stamp eligible women (Parker, 2002). It was found that low income women were at increased risk of chronic diseases and poor nutrition because of a higher incidence of obesity; lower fruit and vegetable consumption due to perception that food items are more costly; consumption of high fat and calorie dense foods; lack of understanding of nutrition information; and difficulty maximizing food stamp resources. Furthermore, eighty-five percent of Oklahomans earning less than $15,000 annually eat less than 5 servings of fruits and vegetables each day (BRFSS). Statewide only 15.4% of Oklahomans eat 5 or servings of fruits and vegetables each day, ranking the state 50$^{th}$ nationwide (OSDH). In addition, eighty-six percent of Oklahoma adolescents eat less than 5 servings of fruits and vegetables each day (YRBS).

**What Has Been Done:**
Through the CNEP program, OCES has leveraged state monies to bring $3.5 million (FY06) in federal nutrition education program funds. This funding supports 119 jobs in 42 Oklahoma counties. CNEP is a voluntary program for adult participants of federal food assistance programs as well as impoverished youth in qualifying schools and communities. Program participants learn to feed their families in order to promote good health and to plan and budget their food dollars so their family won't go hungry at the end of the month.

**Impact:**
CNEP has had a positive impact on the health and wellness of 5,318 low-income Oklahoma families during FY06. During the FY06 program year 53,645 direct contacts (with persons) were made in hour-long learning sessions with enrolled CNEP participants.

Over 91% of adult graduates demonstrate a positive change towards a healthy diet.

- Increase in fruit servings (or equivalent) per day:
  Average number of fruit servings increased from 0.7 to 1.3.
  43% increase in consuming the recommended 2 fruit servings per day

- Increase in vegetable servings (or equivalent) per day:
  Average number of vegetable servings increased from 2.3 to 3.0.
  26% increase in consuming the recommended 3 veg. servings per day

In addition, 43% of graduates less often ran out of food by the end of the month and 40% report that their children ate breakfast more often.

- CNEP staff provided a total of 3,356 hours of nutrition information on healthy eating practices, food preparation and food safety to 16,189 qualifying Oklahoma youth during the 2006 fiscal year.
- A majority of youth (12,764) were taught through school enrichment programs, while 2,204 children received their nutrition education through short term programs and day camps.
- Approximately 18% of surveyed youth participants more often consumed low-cost, healthy foods and 12% increased their frequency of hand washing.

Cost-benefit analyses from across the nation show that for every $1 invested in nutrition education, between $3.63 and $10.64 is saved in future health care costs. Research in Oklahoma determined that the state saves $1.36 in future health care cost for every $1.00 spent on this program. The gain comes from the decrease in nutrition related illnesses, thereby reducing medical costs and an increase in worker productivity (less time away from work due to illness).

During FY06 it was calculated that community volunteers committed over twelve thousand hours, equivalent of over six full time employees, to the Community Nutrition Education Program efforts for an estimated dollar value over $170,600.

**Scope of Impact:** State Specific

**Source of Funding:** Grant

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**Key Theme – Human Health**

**Title: Healthy Oklahoma**

**Issue:**
Over the past decade, the percentage of those overweight has steadily increased in Oklahoma. As many as one in five Oklahoma children are at-risk of overweight or overweight; and two-thirds of adults are overweight or obese. Among children and adolescents, overweight increases the risk of type 2 diabetes, high blood pressure, and cardiovascular disease. The health of Oklahoma youth can be improved by increasing knowledge, skills, attitudes and behaviors related to food, physical activity and body image. Overweight, obesity and associated health problems have a significant economic impact. The estimated annual cost of overweight and obesity in the United States is $117 billion. Just a 10% sustained weight loss has been estimated to reduce an overweight person's lifetime medical costs by $2,200 to $5,300.

**What Has Been Done:**
The Oklahoma Cooperative Extension Service "Healthy Oklahoma" Impact Program educates Oklahoma youth on healthy food, nutrition and physical activity behaviors. The goal of the "Healthy Oklahoma" Impact Program is to encourage Oklahoma youth to improve food, nutrition and physical activity behaviors including: increased intake of dairy foods, fruits and vegetables, increased water intake, increased consumption of breakfast, making healthy snack choices, making healthy choices when eating out, increased use of nutrition facts labels, increased hand washing, and increased time participating in physical activity thereby reducing the overweight and obesity.

**Impact(s):**
The "Healthy Oklahoma Impact Program has reached 3,614 youth during the program's pilot year (2005-2006). Important improvements in food, nutrition and physical activity behavior were observed among Oklahoman youth who participated in the "Healthy Oklahoma" Impact Program. Statistically significant improvements in food and nutrition behaviors were observed among Oklahoma youth with:

- 26% increase in milk intake
- 23% increase in fruit intake
- 10% increase in water intake
- 20% increase in choosing vegetables for snacks
- 25% increase in choosing milk when eating out
- 23% increase in choosing fruit when eating out
- 19% increase in choosing a salad when eating out

Statistically significant improvements in using food labels and safe food handling practices also were observed among Oklahoma youth with:

- 30% increase in reading food labels to learn serving sizes
- 28% increase in reading food labels to make healthy food choices
- 13% increase in washing hands before handling food
- 12% increase in washing hands before eating

A statistically significant improvement in physical activity was also observed among Oklahoma youth with:

- 24% increase in time spent in physical activity

These outcomes represent improvements in food, nutrition and physical activity behaviors which can decrease the risk of overweight related chronic diseases including type-2 diabetes, heart disease, stroke, and certain types of cancer and food borne illness.

**Scope of Impact:** State Specific

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

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## Title: *Spread the NEWS (Nutrition, Exercise, Water & Sleep)*

**Issue:**
Obesity is on the brink of passing tobacco as America's leading preventable killer and it's a growing epidemic among children. The percentage of young people who are overweight has more than tripled since 1980. Among children and teens aged 6–19 years, 16% nationally (over 9 million young people) are considered overweight. In Oklahoma, 14.2 % of youth are at risk of becoming overweight and 11.1% are currently overweight.[1] In addition, 37.3% of the students enrolled in physical education class actually spent more than 20 minutes exercising or playing sports, compared with 80.3% nationally.[2]

Obesity in adolescents is generally caused by lack of physical activity and unhealthy eating habits, combined with genetics and overall lifestyles. Being overweight or obese increases the risk of many diseases and health conditions, including heart diseases, high cholesterol, high blood pressure, and type II diabetes.

Children are also not getting enough sleep; therefore, it is affecting them aversively. A child who has not obtained adequate nighttime sleep is at high risk for symptoms of physical and/or mental impairment. The child may fall asleep in school, have difficulty concentrating in school and other activities, and/or exhibit behavioral problems. Some children who are sleepy become agitated rather than lethargic and may be misdiagnosed as hyperactive.[3]

**What Has Been Done:**
The *Spread the NEWS* program addresses the Childhood Obesity Epidemic through a four-session program addressing unhealthy eating habits and the lack of exercise, water and sleep.

The *Spread the NEWS* Team has and will continue to partner with the Caddo, Canadian, Custer, and Washita County Public Schools to reach $5^{th}$ – $9^{th}$ grade students (middle school/junior high school). This program reaches audiences that span across all socio-economic and racial boundaries. Due to the success of *Spread the NEWS*, additional programs have already been scheduled for this spring. Two team members are also adapting the program to reach upper elementary students. In addition, our team has conducted a state-wide in-service for other Oklahoma Cooperative Extension Educators to share the *Spread the NEWS* program.

[1] Center of Disease Control, 2003 Oklahoma Youth Risk Behavior Survey
[2] State of State's Health Interim Report 2004
[3] National Institute of Health – National Heart, Lung, & Blood Institute

**Impact:**
Students participated in a pretest and posttest evaluation to determine behavior changes, attitudes, and knowledge gained. Eighty-eight percent of the participants had a positive behavior change. The "personally testimonies" from teachers and students, however, is what touched the team members more than anything. The following are examples of these testimonies:

- Teacher's email: "I only saw 2 Gatorades® in the cafeteria today. The rest were water bottles. I bragged on them, and they said it was due to your lesson." Previously the majority of the girls in athletics were getting Gatorade® at the gym and bringing it over to drink with their lunch instead of drinking milk. (Since this time, Gatorade® is no longer allowed in the cafeteria.)
- The following are responses when asked, "Have you changed any habits after participating in the Spread the NEWS program?"
  - I don't drink as much pop and I used to drink a lot.
  - Drinking less pop, eating healthier**.**
  - I eat less junk food and less sugar.
  - Not drinking energy drinks. I am scared of them now.
  - I am cutting down on junk food and pop.
  - Exercised a lot more.
  - I don't drink as much pop and I also exercise a lot more.
  - I eat less junk and I drink more water.
  - I am eating healthier foods.
  - Looking at labels more.
  - Exercising more and trying to get more sleep.
  - I am reading the labels on everything and I am drinking and eating healthier.
  - Not eating junk food. I choose fruit and I enjoy it!
  - I am not drinking so many energy drinks.
  - I am exercising a lot more than I did and I am eating more nutritious foods and reading the labels.
- The following are responses from participants when asked, "What could you tell others that might help them?"
  - I need to get my parents to buy more nutritional foods.
  - Good information. My parents and friends need to read the handouts you gave us.
  - Don't drink energy drinks.
  - Drink more water.
  - Eat more of a variety of foods.
  - Drink less pop.
  - Eat more fruits and vegetables.
  - Choose healthier foods to eat.
  - Exercise more.

**Source of Funding:** State, Smith-Lever

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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, 411 demonstrations, meetings, and conferences were conducted under this goal. These activities were attended by 7,361 participants during the year. OCES personnel conducted 1,004 visits and consultations related to this goal. Minorities reached represented about 19.4% of the participants.

Poultry Waste Management Education provided 144 hours of education resulting in over 1,954 poultry producers, waste handlers, and waste applicators receiving at least three hours of continuing education to maintain certification in waste management in 2006 (223 new applicators and new growers 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 threefold. The number of poultry producers keeping litter application records has increased from 34% in 1997 to over 100% and those using litter storage facilities tripled since the education programs began four years ago. In addition, the amount of litter moved from watersheds and marketed through the OCES sponsored litter marketing website has increased significantly. Pre and post testing indicates that significant improvements in the producers' understanding of key principals such as: relationship between soil-test P and runoff P (80%), how riparian buffers work and why they are important (90%), impact of grazing and forage management on water quality(85%), and the appropriate depth to take soils samples (82%). Transfers of poultry litter out of nutrient-sensitive watersheds increased substantially in 2006. About 86 of the 223 people completing the first 9 hours of PWM education were Private and Commercial Waste Applicators. Land application of litter reported in the state increased from 132,425 tons in 2005 to 196,973 tons in 2006. In the same period, 30 sellers, 100 buyers, and 30 service providers of poultry litter were listed on the OK-Littermarket website, operated by Cooperative Extension. The Eucha/Spavinaw Creek Watershed Project is a program related to the poultry waste management program as it works with producers and others in one of the more intense nutrient – poultry producing watersheds in Oklahoma and Arkansas. In partnership with the Oklahoma Conservation Commission, OCES has developed a BMP demonstration farm. In FY2005-06, 190 poultry producers toured the farm to understand BMPs related to riparian areas and forage management. In addition, extension educators are helping producers write grazing plans. These plans have helped producers raise income by $39 per cow, while reducing off-farm hay and nitrogen fertilizer inputs.

A related program targeting water quality and riparian management is the Stream Stewardship Program. Stream hydrology trailers and traditional instruction are joined together in an

educational package to help audiences understand the effects of flowing water and riparian management on stream beds and water quality. Both youth and adult audiences have received live-action instruction in the stewardship and protection of streams. The four trailer models located around the state, allow audiences to observe the impacts of removing riparian vegetation, modifying stream channels, livestock interaction, and developing flood plains in compressed time, lending understanding of causes and effects. Studies have demonstrated that restoring impaired streams can cost between $100 and $2,200 per linear foot. With as little as a 0.1% adoption rate, this program is estimated to help avoid over a million dollars in stream restoration costs.

The Oklahoma Mesonet is a world-class network of over 110 automated environmental monitoring stations with at least one station in each of Oklahoma's 77 counties. Weather-based farm management can reduce farm inputs, increase crop yield and quality, improve farm sustainability, provide new IPM opportunities, and improve environmental quality. Oklahoma agricultural producers have the opportunity to move from calendar-based to weather-based farm management. This has been made possible by the Oklahoma Mesonet, one of the most data rich weather networks in the world. New data is transmitted every 15 minutes in 5-minute increments from an automatic statewide system of more than 110 towers. This continuous feed of research-quality data is used to maintain a wide spectrum of weather data and agricultural decision support products accessed over the Web. New or revised decision support products include evapotranspiration models for agronomic and horticultural crops, OK-FIRE for prescribed fire management and wild fire management, pecan weevil spraying, IPM spraying models, and Spinach White Rust Model. The Mesonet information was particularly important this past year due to drought and wild fire problems experienced in Oklahoma.

Integrated pest management (IPM) 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. One example, the musk thistle biological control program continues to spread throughout the state and save property owners on their pastures. During FY2005, 40,600 head weevils were collected and released by 38 new cooperators in several counties. In addition, numerous educational programs and sets of materials were completed for land owners in these counties. Results from previous releases in the northeast portion of the state have resulted in 80% to 95% decrease in thistle populations. In addition to saving costs of weevil acquisition, control results in spraying cost saving of approximately $5,200 per farm over a 10 year period. For each of the past eight 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 1.1 annually. This results in a $4.6 million cost saving to farmers and a 43% reduction in pesticide applied.

Pesticide Applicator Education efforts resulted in 3,955 applicators taught proper pesticide delivery methods across four OCES applicator training programs. One of these education programs has been shown to save the Oklahoma Department of Transportation over $530,000 per year and reduce use of several chemicals and use on many fewer acres.

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 $3.6 million with $1.1 million

from Smith Lever funds. About 19 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 – Agricultural Waste Management

### Title: Poultry Waste Management Education Program

**Issue:**
In response to concern about non-point source pollution affecting the highest quality water resources of Oklahoma, Cooperative Extension educates the operators of all registered poultry feeding operations and certified waste applicators in the State. Currently, this education program affects some 700 poultry farms, with production capacity of 300 million birds per year, and the application of 197,000 tons of poultry waste annually.

**What Has Been Done:**
By state law, every poultry grower must take an initial nine-hour series of Poultry Waste Management (PWM) educational sessions covering: regulations, animal waste management plans (AWMP); nutrient management; sampling and calibration procedures, conservation BMPs and poultry litter marketing. In calendar year 2006, 223 new growers and applicators completed their initial nine hours at 12 different sessions, and received completion certificates. A total of 1,949 people have received such certificates since the program began in 1998.

Growers and applicators must also attend three hours of Annual Update Education which they may choose from a variety of offerings given in counties throughout Eastern Oklahoma. Annual Update Education offerings totaled 144 hours of classroom and field instruction in calendar year 2006. A total of 1,954 growers or applicators attended one or more of these sessions, totaling 5,862 People-Hours of Update Education for the year.

New Annual Update topics included: Avian Influenza, Integrating Commercial Fertilizer with Poultry Litter; Nutrient Cycling in Grazing Systems; Litter Weed Seeds: Fact or Fiction; Changes to Nutrient Limited Watersheds; Pasture Management during a Drought; Animal Welfare; Poultry Litter: Waste or Resource; Cost Effective Fertility Management; Increased Fertilization = Increased Herd Health Management; and Avian and Bovine Coccidiosis and Litter. Two meetings were designed for Southeast Asian American poultry producers with a Laotian translator present.

Field tours such as the Spavinaw Creek Producer Tour and the Pond Management Workshop outlined on-farm Best Management Practices, Nutrient Management and Grazing Strategies, Water Quality Concerns, and Shoreline and Watershed Management. These outdoor events allowed participants a “hands-on” learning approach and were well received.

The Poultry Disease Conference: Preparing for Avian Influenza addressed the potential U.S. poultry outbreak of avian influenza with topics such as: Current Avian Influenza Update, Proper Bio-security Measures, Diagnosis, Mass Euthanasia, Carcass Disposal, and Emergency

Preparation/Response to a Disease Outbreak. This conference reached approximately 150 state and federal professionals who deal with animal health and waste management.

**Impacts:**
In 2006 soil nutrient testing in poultry-producing counties increased 4% and litter nutrient testing increased 19% compared to 2005. The number of poultry producers keeping litter application records increased from 34% in 1997 to 100% in recent years.

Transfers of poultry litter out of nutrient-sensitive watersheds increased substantially in 2006. About 86 of the 223 people completing the first 9 hours of PWM education were Private and Commercial Waste Applicators. Land application of litter reported in the state increased from 132,425 tons in 2005 to 196,973 tons in 2006. In the same period, 30 sellers, 100 buyers, and 30 service providers of poultry litter were listed on the OK-Littermarket website, operated by Cooperative Extension.

Testing at June 2006 and November 2006 PWM education events showed that 80 to 90% of attendees understood the importance of soil testing, recommended soil sampling procedures, and the impact of grazing and forage management on water quality. These results indicate the success of the Poultry Waste Management Education program.

**Source of Funding:** State, EPA Spavinaw 319, Southern Region Water Resources, Smith-Lever

**Scope of Impact:** Eastern region of state; poultry industry; Southern Region Extension Water Quality group

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**Key Theme – Integrated Pest Management**

**Title: IPM Helps Oklahoma Landowners Fight Invasive Thistles**

**Issue:**
Musk thistle (*Carduus nutans* L) was introduced into the eastern seaboard area of the US around 1853. Since its introduction, it 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 thistles, 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 increasing public awareness of the problem, development of educational information, demonstrating various control options, and introducing new biological control agents. Numerous demonstration and educational meetings were conducted in 2006 to landowners and NRCS employees. Extension educators and landowners collected approximately 40,600 musk thistle head weevils in Alfalfa, Grant, and Garfield Counties in the Spring of 2006; these were released by 38 cooperators.

To date, this program collected and redistributed 730,660 musk thistle head weevils and 28,910 musk thistle rosette 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 one paper has been published in the scientific journal *American Entomologist*. A Web site was developed and maintained 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.).

PowerPoint presentations (as slide sets) on integrated management of thistle are available in each District office, to assist county and area Extension educators to conduct local programming on thistle management. A fact sheet on the management of invasive thistles (F-7318), including musk thistle, is available to both OCES and landowners. A poster on invasive weed identification and management was developed and used at several Extension workshops. The following publications were distributed in 2005: a set of instructions (with color pictures) to accompany weevil release cups, a brochure on thistle management throughout the year, the fact sheet, and “weevil cards,” constructed of actual rosette and head weevils. IPM, Water Quality, NRCS, and the state Dept. of Agriculture continued to distribute the durable metal signs to designate where weevils were released, which was produced last year. As in 2002, one sign was given to participating landowners free of charge, with additional signs available for purchase..

**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. In addition, if the typical landowner applies 1 lb active ingredient of herbicides per acre annually, biological control has decreased the amount of herbicides applied to the environment by 7.1 million lbs per year. 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: IPM Helps Oklahoma Schools Manage Pests**

**Issue:**
Exposure to both pests and pesticides in school children and staff is a national concern, with many states enacting mandatory or voluntary IPM programs. The U.S. Environmental Protection Agency (EPA) considers child health protection as one of its highest priorities, and has been actively helping schools understand and implement IPM by distributing printed publications and awarding grants to start IPM programs that demonstrate success. The Southwest Technical Resource Center for School and Childcare IPM (SWTRC) is one such EPA-funded initiative, combining the resources and expertise from three states: Texas, Oklahoma, and New Mexico. Of these, only Texas mandates that IPM be practiced in their schools. Oklahoma has neither a mandatory or organized voluntary school IPM program. An effective way to introduce IPM to other schools in Oklahoma is by establishing demonstration programs. Once established, information on the effectiveness of the program, including pest reductions, economic efficiency, and environmental safety can be used as a resource for other schools to consider and adopt IPM through diffusion. This phenomenon of IPM diffusion has been well documented in other states such as Arizona, Indiana and Alabama (Gouge et al. 2006).

**What Has Been Done:**
An Oklahoma School IPM project was conducted from 2005-2007. A set of implementation guidelines was developed from those used in Texas and Florida. A School IPM website was developed to serve as a clearing house for educational materials, and as a clearing house for any school that was interested in developing an IPM program. A short survey was conducted to determine current pest problems and pest control practices from various schools throughout the states. Two schools were selected to serve as initial demonstrations, and a more extensive inventory of pest presence at the two demonstration schools was conducted using glue boards.

**Impact:**
The website is being developed and will be completed in 2007. Results of the Oklahoma School survey indicated that 50% of the schools relied on monthly pesticide applications, and an additional 25% were unsure of their pest control program. Only 6.25% of the schools surveyed indicated that they used pest control on an "as needed" basis. Presentations on school IPM were made to the School Plant Managers Association, the Oklahoma Education Association, and the Oklahoma Pest Control Association. Following these presentations, we assisted two additional schools in developing IPM programs for their school districts.

The initial pest inventory of the two demonstration schools found a variety of pests that occurred in the school, including, brown recluse spiders, house mice, various species of cockroaches, ants, crickets, silverfish, pillbugs and others. After the inventory, the schools were evaluated for needed non-chemical control measures, which included evaluating the building for all areas that could provide entrance and shelter of nuisance pests. Recommendations were made and implemented. Results of a post survey indicated a nearly 90% reduction in mouse captures following the recommended remediation. Initial results of the brown recluse surveys indicated that reductions were occurring in recluse captures. The results of this project were used to expand the program in 2007 with an additional EPA-sponsored grant.

**Funding:** Smith Lever; State, EPA

**Scope of Impact:** State Specific

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**Title: Cereal Aphid Pest Management Initiative**

**Issue:**
Cereal aphids, including the bird cherry oat aphid, the greenbug and the Russian wheat aphid are the most important pests of winter wheat throughout the Southern Great Plains. Damage estimates from cereal aphids in Oklahoma alone can cause more than $100 million in losses annually. An Areawide Cereal Aphid management project was initiated in 2002 with the goal of demonstrating the value of an integrated approach to cereal aphid management, including the use of resistant varieties, the incorporation of natural enemies, and crop rotations.

**What Has Been Done:**
Dr. Sean Keenan, the Rural Sociologist for this project has completed collecting data from the focus group studies conducted with 147 cooperating producers from all cooperating states. He just finished a second round of focus group interviews with cooperators in all cooperating states and has published a book chapter and the 2005 Report. Dr. Paul Bergner is also summarizing the

economic impact of various management practices that have been used by the producers. A CD version of the Cereal Aphid Expert System has been completed. Planned activities include a multi-state Wheat Production Guide which will be completed in December 2007, and a DVD video that highlights the Areawide program, which is in production and slated to be completed in 2007. A quarterly newsletter called "Plain View" is sent to all producer cooperators. Field plots have been established for 4 years and data has been collected under the supervision of Dr. Kristopher Giles, which is being summarized. Additional information can be obtained by going to the Areawide web site at http://www.ars.usda.gov/Business/docs.htm?docid=6555. All previous annual reports are available on that site.

**Impact:**
Participants in the AWPM program in Oklahoma have become more proficient in managing grass weeds in their winter wheat. Demonstration sites at all locations in the areawide project showed that rotational cropping systems had 40% fewer cereal aphids than continuous wheat systems and 40-200% fewer winter annual weeds. Results of the focus group interviews indicated that cooperators became more familiar with the Glance 'n Go sampling system for greenbugs, but still wanted more instruction on how to use it so they could become more confident of its reliability. The Areawide Cereal Aphid Pest Management Initiative is in its fifth year and includes state partners from Colorado, Nebraska, Kansas, Oklahoma, Texas and Wyoming.

**Source of Funding:** State, IPM, Smith-Lever

**Scope of Impact:** Multistate

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**Key Theme – Natural Resources Management**

**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 12 years and shows no sign of ending. It has survived personnel changes, funding challenges and stormy weather.

We have reached about 2405 third grade students with the help of 610 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 conducing 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 2009. 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; Local Grants
**Scope of Impact:** State Specific

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**Key Theme – Pesticide Application**

**Title: Continuing Education and Consultation Helps the Oklahoma Department of Transportation Manage Roadside 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.

Part of this acreage is the I-35 International Trade Corridor. Proper management results in vegetation that is attractive as well as functional in stabilizing the road surface against soil erosion and providing maximum visibility for millions of motorists. The natural process of ecological succession coupled with both intentional and unintentional transport of plant materials by people results in the colonization of the roadside by some undesirable plants (weeds). Weeds are problematic because they either do not offer adequate soil stabilization along the right of way, they reduce motorist visibility or they pose risk to native plant communities or crop profitability on adjacent private lands. Some of these weeds can be state Noxious Weeds or Federally listed Invasive Species. 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:**
New ODOT roadside vegetation managers obtained an 86% pass rate in 2006 on PAC exams and have been provided continuing training to maintain PAC and ECC status. They have been trained and counseled on weed identification, spray equipment selection, equipment troubleshooting/calibration, herbicide selection and use, as well as identification and avoidance of pesticide application to environmentally sensitive areas. Nine hands-on calibration workshops were conducted in 2006 where applicators brought their own equipment for calibration. In 2006 the ODOT continued its use of an "Approved Herbicide & Adjuvant Bid List" first developed by our program in 2005. Under this policy, these are the only herbicide and adjuvant products which ODOT will purchase and use as they have been researched and found to be effective under normal expected conditions when used according to Federal and State label directions. The 3rd Edition of the Oklahoma Roadside Vegetation Management Guidelines was distributed to ODOT field staff in early 2006 and made available to anyone having internet access. A Pictorial Guide to Solving Common Roadside Vegetation Management Issues was distributed to ODOT. New weed control suggestions were developed and implemented through internet based current reports in 2006. Roadside equipment inventory status and herbicide use surveys were conducted again in 2006 to track trends.

**Impact:**
Sixty-three ODOT personnel received pesticide applicator certification training in 2006 with 530 pesticide applicators receiving continuing education in 14 workshops in 8 locations across Oklahoma. Roadside acreage in Oklahoma treated with atrazine, a Restricted Use pesticide, was reduced from 35,936 acres in 1997 to 6,788 acres in 2005 to 0 acres in 2006. This was a planned phase out by ODOT as per our recommendations. This elimination of atrazine from the ODOT vegetation management program will eliminate risk to water quality from this specific herbicide/program. Total roadside acreage treated with herbicides has declined from 100,817 acres in 1999 to 98,556 acres in 2005 to 53,074 acres in 2006 (47% reduction). Training directly resulted in ODOT eliminating atrazine use, a Restricted Use Pesticide, with a General Use classified glyphosate + 2,4-D tank mix or similar combination. By late 2005 the Special Local Need (SLN) permit for atrazine use on Oklahoma roadsides was withdrawn since use had fallen to very low levels. Newer treatments pose less environmental risk. Equal or improved weed control also resulted, and in some instances an additional mowing was eliminated that would have cost at least $18.00 per acre compared with an herbicide cost of less than $8.00 per acre. With a conservative estimate of 1 mowing per year saved on 53,074 acres and the cost of $8 vs $18 per

acre for this herbicide treatment substitution for mowing, we estimate ODOT saving $530,740 per year by following our vegetation management recommendations.

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 $80,000 per year over 2001 figures. Most recently our environmental stewardship activities have included alerting ODOT managers to the location of herbicide sensitive specialty crops on adjacent private lands. Clear zones on the roadsides contain equally healthy turf as before, 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: CY-2006**

**Issue:**
Subterranean termites are the most damaging pests of wooden structures and wooden products throughout Oklahoma and the United States, and are worldwide pests. In the U.S., building owners spend $1.5-2.0 billion annually to protect structures and repair damage from termites. Oklahoma extension agents, pest control company professionals, and owners of wooden structures have a need for information on existing and new technologies that protect wooden structures from termites. Termites remain a continuous threat to our structures. This threat is steadily increasing due to the northward spread of the exotic Formosan subterranean termite from Louisiana and southern Texas into northern Texas.

**What Has Been Done:**
A formal field survey to search for the Formosan termite and indigenous subterranean termites was completed during 2006. To date, the Formosan termite has not been discovered in Oklahoma, but remains a pending threat. Field monitoring devices detected no Formosan termites during 2005 and 2006, but remain in place for the continuing monitoring program. Field and laboratory studies on termite foraging, food preferences, taxonomy, distribution, soil-movement capabilities, cuticular hydrocarbon profiles, proteomic- biochemistry determinations, and life habits are

underway. These studies include environmentally safe termite baits, new technology non-repellent termiticides, modified termiticide application-to-soil protocols, termite-resistant building materials, and fate of termiticides in soil. Pest control technicians seeking 'certified pesticide applicator' status for structural and general household pests received training at the Pinkston Education Facility for Structural-Urban Pest Control located on OSU's Stillwater Campus. During 2006, 136 applicators earned certification through OSU's program. A total of 30 scientific technical conferences, workshops, training sessions, and presentations were conducted, attended by more than 1,425 pest management professionals. Additionally, 22 Oklahoma "Experimental Use Permit" (EUP) structures were in a program to evaluate new termite control methodologies that could lead to reduced pesticide use and improved termite control. Two peer-review scientific papers, four technical papers/proceedings, and five technical abstracts were published during 2006.

**Impact:**
Field studies have led to increased knowledge of termite foraging behavior, population densities, foraging territories, and number of different termite colonies that can occupy a given soil area. This aids in determining the proper emplacement and use of baiting technologies, and termiticide application methodologies, that are used in termite control. These studies have provided pest control professionals and homeowners knowledge of the termite species prominent in their locales, improving control measures. The integrated pest management training and teaching approach in numerous meetings has led to increased understanding of sanitation practices around structures, building construction practices, improved monitoring and inspection of wooden buildings to reduce or eliminate conditions that are conducive to termite infestation, and expected swarming times in Oklahoma and contiguous states. This means reduced risk to homeowners and the environment, and more efficient and effective structure protection by pest control operators in Oklahoma.

EUP studies provided data for the USEPA to determined whether or not to grant pesticide companies label changes that reduce overall use of pesticides around structures, thus reducing pesticides in the environment and but still result in termite control and protect wooden structures.

Certified pesticide applicator certificates awarded for General Pests, and Structural Pests, combined, numbered 136 during 2006. This OSU and ODAFF certification program (close cooperation with the Oklahoma Department of Agriculture, Food, and Forestry-ODAF) has resulted in a measurable reduction of formal complaints from consumers against the pest control industry in Oklahoma. This OSU Program also trains pesticide applicators in groups of 18- to- 25, eliminating the pre-program days of individual certification evaluations. This increased efficiency significantly improved pesticide applicator competency and therefore reduced complaints to ODAFF. This creates a more effective and efficient regulatory environment for ODAFF, and a more professional relationship between ODAFF regulators and the pest control companies they regulate. This saves thousands of hours of time and reduces expenses of regulatory agencies and pest control companies alike.

**Scope of Impact:**
Multi-state (Arizona, Arkansas, Kansas, Mississippi, Louisiana, Missouri, Nebraska, Texas, Oklahoma). 136 certified pesticide applicators trained and certified during 2006 at OSU's Pinkston Education Facility; 1,429 (approximately) attendees for OSU presentations at workshops and conferences; National (all states including Hawaii, except Alaska where there are no termites),

and International (international meeting presentations, publications, and cooperative research with Australian scientists; international utilization of research results)

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**Key Theme – Recycling**

**Title: Oklahoma Pesticide Container Recycling Program**

**Issue:**
Unrinsed empty pesticide containers cannot be disposed in sanitary land fills, buried, or burned. These dirty containers can be hazardous waste. Empty pesticide containers that are rinsed properly cannot by used for any purpose and must be recycled or disposed of in a landfill. This program promotes producers and users of pesticides to first rinse there containers properly to prevent them from being considered hazard waste and a detriment to the environment. This program promotes the more environmentally sound practice of recycling to keep the containers out of the landfill.

**What Has Been Done:**
Each year OSU PSEP in conjunction with participating counties holds one day collections for farmer and ranchers to recycle their clean containers. Also OSU PSEP coordinates with USAG Recycling what businesses need their containers picked up. OSU PSEP promotes this program at numerous trade shows and meetings throughout the year. Educational programs are also given to promote this program to interested parties to promote this environmentally friendly program.

**Impacts:**
For 2006 throughout the state of Oklahoma, containers were collected in 20 counties with 22 County Educator held sites for farmer & ranchers. 2006 – A total of 29,117 plastic containers were collected with a less than 1% rejection rate at the county sites. Oklahoma is averaging approximately 90,000+ pounds of solid waste were recycled and kept from the landfill with this program.

**Funding Source(s):** State (ODAFF), and PSEP; Smith-Lever

**Scope of Impact:** State Specific

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**Key Theme – Riparian Management**

**Title: Stream Stewardship**

**Issue:**
Streams are an important and highly vulnerable part of the landscape. The great majority of land owners and managers have no concept of how streams function. They don't see the link between their actions and stream channel condition. This lack of understanding is the foundation for widespread stream degradation throughout the state. Stream degradation causes serious ecological, aesthetic and economic damage in the form of land loss, increased flooding, loss of fish habitat, and increased sedimentation. The costs of restoring impaired streams range from around $100 to more than $2,200 per linear foot. Preventing stream degradation is extremely cost effective.

**What Has Been Done:**
Stream hydrology trailers are highly engaging educational tools in which flowing water cuts through a bed of plastic grit to model stream processes. A wide variety of audiences have received live-action instruction in the stewardship and protection of streams. The four trailer models located around the state, allow audiences to observe the impacts of removing riparian vegetation, modifying stream channels and developing flood plains in compressed time, lending understanding of causes and effects. Youth and adult audiences learn about streams from Extension educators at outdoor classrooms, schools, landowner meetings, and other educational venues. Training sessions for Extension Service and other agency professionals have been held both in and out of state.

**Impacts:**
The seeds of change were sown in the minds of 10,631 Oklahomans in 2006 by the stream stewardship program. Increasingly as Oklahomans view degraded streams they are thinking, "Someone messed this up" instead of "It's just another sorry looking but normal Oklahoma stream". And more importantly, someday when they are faced with a stream management decision, they will recall the need to tread gently lest they set in motion a chain of destructive changes they will regret. If only one tenth of one percent of the audience employs the stewardship practices discussed on 1000 linear feet of stream, the potential cost savings from avoiding stream restoration would be $1,063,000.

**Source of Funding:** State; EPA (initial funding to construct trailers), Southern Region Water Resources Project

**Scope of Impact:** Multi-state educational programs with Arkansas and Texas, Oklahoma Stream Team, Oklahoma Conservation Districts, County Extension Programs, and numerous School Districts

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**Key Theme – Weather and Climate**

## Title: OK-FIRE: A Weather-Based Decision Support System for Wildland Fire Managers in Oklahoma

**Issue:**
With more than half its land consisting of wildlands, the importance of fire in Oklahoma, both natural and prescribed, becomes apparent. About 2.5 million acres of wildlands are typically burned in Oklahoma every year, 10% by wildfire and 90% by prescribed fire. During severe fire seasons, however, wildfires can consume many more acres, such as during the 1995-96 and 2005-2006 seasons, when over 650,000 and 550,000 acres, respectively, were burned by wildfire alone. To aid wildland fire managers in their activities, operational fire and smoke management systems, based on recent, current, and forecasted weather conditions, are critical. Such systems can aid in both wildfire preparation and suppression, as well as in planning and conducting prescribed burns. With respect to prescribed fire, benefits include better pre-burn planning and management during the burn. With respect to wildfire, benefits include better anticipation of severe wildfire conditions, the ability to better determine staffing levels, and better suppression strategies during the wildfire itself. Of course, the potential to save lives and structures is there as well.

**What Has Been Done:**
Since the mid 1990s, with the beginning of the Oklahoma Mesonet, the state's automated weather station network, various fire weather, fire danger, and smoke management tools and models have been developed in conjunction with the Oklahoma Climatological Survey (OU) in Norman. However, there has never been a focused decision-support system solely dedicated to wildland fire management. Beginning in September 2005, funding from a three-year federal grant became available to develop "OK-FIRE", a weather-based decision support system for wildland fire managers. OK-FIRE has a three-fold emphasis: (1) an expanded suite of real-time products for fire weather, fire danger, and smoke dispersion; (2) a dedicated OK-FIRE web site to act as the delivery mechanism; and (3) regional training and customer support for the user groups involved. At this point, our user groups include the USDA Forest Service, Bureau of Indian Affairs, US Fish and Wildlife Service, National Park Service, US Army Corps of Engineers, National Weather Service, Oklahoma Forestry Services division, and The Nature Conservancy. During 2006, the password-protected OK-FIRE web site was designed and developed, new products created and older ones enhanced (including integration of an 84-hour forecast into the fire weather and fire danger products), and eight one-day computer workshops conducted in the fall.

**Impact:**
The eight OK-FIRE computer workshops during fall 2006 involved 101 attendees, of which 83 were wildland fire managers (federal, state, private) and 13 were from the National Weather Service. Many of the fire managers are now actively using the OK-FIRE system during the 2006-2007 burn season, while the National Weather Service consults the system in conjunction with

their fire weather responsibilities. Thus, the OK-FIRE system is already making an impact across Oklahoma, not only for prescribed burns but also for wildfire anticipation and suppression activities. Some feedback from OK-FIRE participants is included below:

*"I was very impressed with your presentation OK-FIRE. I have attended numerous fire training sessions on computer programs and weather over the last 25 years, and you by far did the best. You were able to bring fire behavior, current weather and forecasted fire weather together in a very understandable format ... This program provides today's fire managers with all the information in one spot"*

- Dennis Weiland, Chief Ranger, Chickasaw National Recreation Area (Nat. Park Service)

*"I enjoyed the recent OK-FIRE workshop in Woodward and am impressed with the work you've done on this project. I've attended several NWCG fire training courses lately with folks from around the U.S., and the OK-FIRE website is by far the most informative and user friendly fire danger/forecast site I've seen. I look forward to evaluating it during the upcoming fire season."*

- Chris Hise, The Nature Conservancy

*"OK-FIRE is a great web site and those agencies it serves in Oklahoma are fortunate to have an all-in-one-place to go for information. I wish similar web sites existed for fire/forestry agencies in the other 3 states in which our office provides weather forecasts. Texas Forest Service, through Texas A&M, has a fair web site providing fire danger indices and such, but is a distant second to OK-FIRE."*

- Bill Adams, National Weather Service - Shreveport

*"The OK-FIRE system is a great tool for our community to use to: 1) determine when (actual time frames) to call additional personnel in to staff wildland firefighting trucks, 2) give fire incident commanders an idea of fire control tactics which may, or may not, be effective, 3) to alert community decision makers on the threat to Stillwater, and 4) to warn the public of impending danger ... We continue to use this technology to help us determine appropriate staffing levels, response procedures, and pre-fire planning and community risk assessment."*

- Larry Mullikin, former chief, Stillwater Fire Department

*"I really like the new system. As good as the old Mesonet system was the new system is better. It has more information, but not does not overwhelm you. I would have found the new system confusing, but thanks to the workshop it was clearly explained. The instructors were outstanding. I am looking forward very much to the next session. As the people developing this program make improvements to it, I am fully confident that their improvements will make the system even better. I have a great deal of experience with prescribed fires, but with all my experience I won't even consider burning before using the information that is now available to us. It removes much of what used to be at best an educated guess or a SWAG in some cases. Thanks very much for providing us with such an effective tool. The OK-FIRE Wildland Fire Management Decision-Supporting System is just as important as a drip torch & backpack fire pumps."*

- John Sanders, US Army Corps of Engineers

**Scope of Impact:** state-specific, multi-state with Arkansas and Texas

**Source of Funding:** Joint Fire Science Program (U.S. Dept. Agriculture / U.S. Dept. Interior)

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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, 14,897 demonstrations, meetings and conferences (including 8,198 for 4-H and youth programs) were conducted under this goal. OCES personnel conducted an additional, 82,385 visits and consultations. These activities were attended by 634,091 participants during the year (including 405,618 participants attending youth activities). Approximately 20.4% of the attendees of programs under this goal represented non-white audiences. These figures might be compared to 26.0% in the general population of Oklahoma. Several programs contributing to this goal train and use large contingents of volunteers. Volunteers contributed over 18,241 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. In addition, over 55 million person-contacts occurred through mass media educational programming under this goal in 2006.

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, e-commerce, and through the applications engineers program. Applications engineers work with small to mid-sized manufacturing companies in rural communities to solve production, expansion and efficiency questions. 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.

The Applications Engineers program served more than 91, mostly rural, manufacturers that employ more than 4,400 citizens. The engineering assistance in the client projects resulted in over

$30 million of increased sales for these firms and another $14.8 million 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 222 jobs retained. This program showed a total net impact to the state economy in excess of $87 million in 2006.

The Healthy Communities initiative unifies many of our existing programs as well as several new efforts. This initiative centers on community infrastructure, community economic development, and community leadership development. For example in addition to community service studies in health care, waste disposal and community transportation, eleven studies were done analyzing retail trade, five studies on mainstreet and business and industry impact, and four communities received economic regional analysis studies. During 2006, the Initiative for the Future of Rural Oklahoma (IFRO) celebrated the conclusion of the pilot project to develop local community leadership as well as provide local projects in economic development. This program included 13 well-funded pilot projects in 17 counties. To date the IFRO program has resulted numerous projects continuing past the pilot including a community-wide tourism project, significant county economic development strategic planning, leadership classes, an airport improvement project, a community primary care facility, a community marketing videotape, several training programs including Oklahoma Pride, a new economic development authority, value-added merchandising and home-based business projects, an USDA grant on value-added project planning and development, and three websites developed. In addition, economic development assistance and strategic planning has been provided to communities through several methods including training, technical assistance, and collaboration/cooperation with other agencies and groups.

Programs related to agricultural business management remained strong. The Federal and State Taxation Education program provided sixteen hours of continuing professional education for 2,350 CPAs, attorneys, and tax professionals. These individuals prepare between 90% and 95% of the farm tax returns filed by Oklahomans. OCES continues to provide individual farm business financial planning and management assistance through the IFMAPS program and group record accounting through its Quicken workshops. In addition, IFMAPS continues to support the Oklahoma Agricultural Mediation Program for farm business analysis assistance.

OCES continues a strong effort to build and support healthy families across the state. One of these programs has provided home visitation parent education programs since 1991 and launched the state's first Healthy Families America (HFA) site in 1995. HFA is an evidence-based initiative of Prevent Child Abuse America. 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 during pregnancy or around the time of a baby's birth, and may continue until the child is age five. Participation is voluntary. Services include home visitation, center-based education and support, screening and assessment, and referrals to health care providers and other community resources. Evaluation of 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%. Studies of other Healthy Families programs suggest that participants are 1/3 to 1/2 as likely to maltreat their children as comparable families not enrolled. Research suggests that prevention programs reduce the costs for intervention or remedial services such as health and mental health care, foster care, child welfare, juvenile facilities and special education. In FY 2006, 104 families with 101

children age 5 or under were provided 1,745 home visits and 147 parent education, support group, and family activity sessions. Also, 143 child development screenings were provided.

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 couple examples. Some of the faster growing areas include: natural resources education, environmental stewardship, service learning, forestry and wildlife, shooting sports, youth entrepreneurship, and GIS/GPS.

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 $18.1 million with $2.2 million from Smith Lever funds. About 177 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 5

**Key Theme – Agricultural Financial Management**

**Title: Oklahoma Farm and Business Tax Schools**

**Issue:**
Frequent changes in Federal and Oklahoma State Tax Laws create a need to keep tax preparers informed of the impact of the changes and how to best help their clients utilize the tax planning and management opportunities available in the current tax laws. These tax schools are designed to update tax preparers about new laws and regulations covering farm, non-farm business and individual taxpayer issues.

**What Has Been Done:**
This program has been conducted for the past 45 years. It has grown from a one-day seminar to its present form of two days per location for the fall Farm and Business Tax Institutes and the summer Tax Clinic. This year was the second for our one day Special Topics Course. The combination of all the schools allows a preparer to get the full 40 hours of CPE/CLE as required by state. Topics covered range from presentation of new tax laws and their implications, agricultural issues, business issues, tax planning opportunities, professional ethics, retirement, and social security to name a few. Eleven sessions are conducted each year with two of these in the summer and nine in the fall and two one day special topics courses. Total 2006 attendance for the schools was approximately 2,350 tax preparers. Certified public accountants make up 44 percent of the attendance, 28 percent are tax preparers and bookkeepers, 9 percent are enrolled agents, 2 percent are attorneys, and the remaining 17 percent come from a variety of backgrounds. These tax preparers file between 90 and 95 percent of the farm returns for taxpayers in the state of Oklahoma.

**Impacts:**
High quality, professional instruction is provided to make continuing education credit available for Certified Public Accountants, Enrolled Agents, and Tax Attorneys. Many of those attending have

stated that they have been coming to these programs since they began. Participants filed more than 34,652 Federal farm tax returns and 194,412 Federal non-farm tax returns as reported by the participants in the most recent program evaluations. Most of the tax preparers that attend are from Oklahoma however there have been preparers from Kansas, Texas, New Mexico, Arkansas, Florida, and California attending the program in order to maintain their Oklahoma accreditation.

**Funding Sources: User Fees, State, Smith-Lever**

**Scope of Impact:** State Specific

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**Title: Quicken for Farm Financial Records**

**Issue**:
All farmers need records to facilitate tax preparation and many are seeking a low cost, easy-to-use system to better sort and summarize information for management purposes. Farmers do not need to spend a large sum of money to purchase a customized financial records system as an inexpensive, commercial software package designed for personal use can be tailored for farm use.

**What Has Been Done**:
"Hands on" workshops and step-by-step written instructions demonstrate how to adopt Quicken, a popular, inexpensive personal financial record keeping package for farm and ranch use. Workshops are conducted on request and have been held in many counties over the past 12 years. In addition to training for in-state educators, training for agents in other states has been provided. Workshops have also been conducted at national producer meetings. Workshop participants and notebook purchasers continue to receive support through a quarterly newsletter with financial management tips. They also have access to instructions, newsletters, and video clips on a website: http://www.agecon.okstate.edu/quicken. The website includes print instructions from workshop notebooks plus adds answers to Frequently Asked Questions, newsletters, and short video and audio components so that audiences can see software applications just as they might in a "hands on" workshop. The content is segmented to allow users to focus on items relevant to them. An analogous CD-ROM version is available to make the website resources available to those without Internet connections and/or dial-up modem connections where video viewing would be difficult if not impossible. Through the website, users gain access to a fuller complement of the educational resources available than may be delivered in a specific time-limited workshop. Users can access topics that are timely or relevant to them 24 hours per day, 7 days a week to producers regardless of where they are in the world. In addition, users can access workshop content at their convenience and review them as many times as desired.

**Impacts:**
In the past 12 years, thousands of producers have received assistance in getting a better handle on their financial situation. Having computerized financial records simplifies tax preparation and allows producers to more easily sort and summarize information to support decisions. Producers who have participated in workshops indicate that they gain new skills as well as confidence in using the computer in their business. They begin to think about sorting their income and expenses by enterprise to identify profit (and loss) centers on the farm. More informed decisions enhance prospects for profitability. And, certainly not least, reports for lenders and the IRS are much less painful to develop. In a follow-up survey, most participants indicated that they have improved farm financial records and make better farm management decisions. In addition, they noted that financial reports are easier to generate and that tax reports are easier to prepare. Some indicated a substantial savings in tax preparation costs.

**Scope of Impact:** National. Support is provided to educators nationwide throughout the year via e-mail and phone calls. Most recently, requests for permission to use electronic files has come from a high school teacher in Washington state and from an Extension associate working with producers in New York. Materials are shared through regional Extension committees and to others upon request.

**Funding:** State and Smith-Lever

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**Key Theme – Children, Youth, and Families at Risk**

**Title: HEALTHY FAMILIES: Support & Education for Families with Infants & Young Children**

**Issue:**
In Oklahoma during fiscal year 2005, 13,328 allegations of child abuse and neglect were confirmed, half of which were under age six. Over 80% involved neglect. An average of 40 children die due to maltreatment each year, over 72% of whom did not live to age two. More than 75% of abuse and neglect occurs in the hands of a child's own parents. The most active and significantly influenced brain development period is birth to age 3. Research indicates that home visitation and parenting education and support services around the time of a baby's birth through early childhood reduces the risk of child abuse, and contributes to positive, healthy childrearing practices and family functioning.

**What Has Been Done:**
OCES implemented home visitation parent education programs in 1991 and launched the state's first Healthy Families America (HFA) site in 1995. HFA is an evidence-based initiative of Prevent

Child Abuse America. 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 during pregnancy or around the time of a baby's birth, and may continue until the child is age five. Participation is voluntary. Services include home visitation, center-based education and support, screening and assessment, and referrals to health care providers and other community resources.

OCES Healthy Families programs served three counties in the past year: Canadian, Delaware, and Texas. In FY 2006, 104 families with 101 children age 5 or under were provided 1,745 home visits and 147 parent education, support group, and family activity sessions. Also, 143 child development screenings were provided. Primary funding for the three OCES Healthy Families programs is from state legislative appropriations through the Oklahoma State Department of Health, Child Abuse Prevention Fund. FY 2006 contract awards amounted to $313,161. Collaboration with a variety of local community organizations is emphasized to garner additional program support, better utilize scarce resources, and provide a comprehensive array of services to effectively meet families' needs.

**Impact:**
Participant surveys indicate high satisfaction with the helpfulness, service quality, and increased knowledge received. Previous evaluation of 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%. Studies of other Healthy Families programs suggest that participants are 1/3 to 1/2 as likely to maltreat their children as comparable families not enrolled. Research suggests that prevention programs reduce the costs for intervention or remedial services such as health and mental health care, foster care, child welfare, juvenile facilities and special education.

**Source of Funds:** State, Smith-Lever

**Scope of Impact:** State Specific

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**Key Theme – Home-based Business Education**

**Title: Economic Development Through Micro, Home-Based and Family 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:**
Since 1985, OCES has recognized the growing trend of entrepreneurship through home-based and/or micro businesses. Through the statewide network of Extension Educators OCES provides written materials that help a business owner get started and market their product or service. Specific materials for specific needs are available. Numerous workshops on a wide variety of topics have been developed. One-on-one assistance is offered.

**Impact:**
- Based on a 2003 survey, 20% of households own and operate a business. 68% of those business are family owned and operated, 66% are home-based businesses, and 92% are micro (employing 10 people or less) in size. Averaging nearly $40,000 in gross income, these potentially 175,000 home-based businesses add $6 billion to Oklahoma's annual economy with family businesses generating a similar amount.
- 80% of businesses assisted by the program are still in business after four years.
- 30 new food-based businesses have started after participating in "Basic Training"
- In a 1998/99 survey, 28% of respondents have started a business. With an average income, this means over $1,500,000 annually has been added to local economies.

**Funding:** Smith-Lever; State

**Scope of Impact:** State Specific

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**Key Theme – Jobs/Employment**

**Title: FY2006 Impact Statement for the Applications Engineering Program**

**Issue:**
The Oklahoma Department of Commerce's 2004 Manufacturers database lists 5,669 manufacturing firms in Oklahoma. Only 47 (0.8%) have more than 500 employees. Breaking it down further, over 99% have fewer than 500 employees, 92% employ fewer than 100, and 86%

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.

Personal per-capita income in rural Oklahoma is about 60% of the national average. Manufacturing jobs are among the higher paying jobs in Oklahoma. A robust manufacturing sector can be an important source of jobs in the rural areas of Oklahoma. Also, manufacturing as a percentage of gross state product has been declining and is now exceeded by services. This trend should be a cause of concern for rural areas in that they are less likely to be competitive for service sector enterprises.

**What Has Been Done:**
To address the difficulties faced by our small rural manufacturers, the College of Engineering, Architecture and Technology and the Division of Agricultural Sciences and Natural Resources at Oklahoma State University work in partnership to provide technical assistance through the Applications Engineering program. Since 1997, Applications Engineers have been deployed in the state in collaboration with the Oklahoma Cooperative Extension Service.

During FY 2006, the Applications Engineers, in cooperation with the Manufacturing Extension Agents of The Oklahoma Alliance for Manufacturing Excellence, served 91 small, mostly rural, manufacturers that employ more than 4,400 of our citizens. This effort included more than 2,500 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 FY 2006, the Applications Engineers client projects had the following impacts:

| | |
|---|---|
| Sales increase | $30,988,000 |
| Sales retained that would have otherwise been lost | $14,840,000 |
| Cost savings | $4,902,316 |
| Costs avoided | $2,752,500 |
| 149 new jobs created at $75,511 per job | $11,251,079 |
| 222 jobs retained at $75,511 per job | $16,763,353 |
| 5 jobs lost at $75,511 per job | -$377,553 |
| Investment in new plant facilities and equipment | $6,760,700 |
| Total impact | $ 87,880,395 |

**Scope of Impact:** State specific

**Source of Funding:** Grant; State; Smith-Lever

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**Key Theme – Parenting**

**Title: Parenting Education**

**Issue:**
The need for improved parenting skills continues to be a critical issue in Oklahoma in general and Bryan County in particular. Bryan County's rapid growth coupled with the county's statistics relating to poverty levels, number of cases of reported child abuse and neglect produces an environment that requires better educational services to parents.

During 2002, Bryan County ranked 62nd out of 77 counties in the number of confirmed cases of child abuse and neglect. Bryan County's rates of birth to single women and the number of births

to teenage girls are much greater as compared to the state average. For example, during 2002, more than 4 out of 10 births were to single women, and 1 out of 5 births were to teenagers. When Oklahoma's divorce rate along with Bryan County's relatively high juvenile arrest rates as compared to the state average is factored in, it is clear that many Bryan County children are not the recipients of quality parenting.

**What Has Been Done:**
Realizing this need, the 2005 Advisory Committee recommended that the OSU Extension Service emphasize parenting skills in my timeline and also target the county's growing Hispanic population. The avenues that were recommended by the council to accomplish this were workshops on basic parenting, articles about parenting to local newspapers and a flyer about parenting distributed throughout the county in English and Spanish.

The objectives of the Basic Parenting classes were to help parents to understand the importance of taking care of themselves; to better understand their children; to understand how to discipline and guide their children; to understand how to nurture their children and to learn how to motivate their children in learning. The target audience for the Basic Parenting workshops and the flyer were all parents including single parents, foster parents & legal guardians in Bryan County.

**Impact:**
Four Basic Parenting Workshops with six lessons for 1½ hours for each class were completed last year. There were 39 participants with 235 contacts for the year. There was an exam administered at the end of each class. The class average score on the exam was 86%. One hundred percent (100%) of the participants indicated that expenditures of the taxpayers dollar for this program were appropriate.

The monthly flyer, "Families Matter", was funded through an Ambassador's Grant. It produced 1,100 flyers in English and 200 in Spanish each month. The flyer was distributed at various locations throughout Bryan County between January 2006 and December 2006. The flyers were distributed in high traffic areas such as the water department, Health Department, doctor's offices and convenience stores. The flyers were also distributed electronically to approximately 35 agencies and interested parties in the county. Those receiving the flyers were encouraged to copy & distribute freely. Employees from the locations where the flyer was left told me the flyers were always taken. My Hispanic PAC member talked to employees at the Hispanic businesses and reported that the flyers were always taken and to please continue them.
Two newspaper articles about parenting were sent twice monthly to two county newspapers reaching a mass media of 8500.

While no specific statistics are available for the impact of the "Families Matter" flyer and the newspaper articles,

**Scope of Impact:** State Specific

**Source of Funding:** State, Ambassador Grant, Smith-Lever

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**Key Theme – Youth Development/4-H**

**Title: McClain County Oklahoma Home and Community Education Clubs Develop Leadership and Foster Volunteerism Through Community Service.**

**Issue:**
McClain County OHCE clubs worked to achieve one of their annual goals which states: *To offer opportunities for involvement in the community through volunteerism and community service.*

**What Has Been Done:**
McClain County OHCE always try to have one project each year which helps the environment. Towns and rural areas have the similar problems when dealing with unwanted trash. Most of the membership live on a fixed income, so projects are selected that will be inexpensive and that will benefit the community.
The planning committee made a list of the following items that could be recycled:
Used Cell Phones
Box Tops for Education on Betty Crocker products
Campbell Soup Labels
Newspapers, Catalogs and Magazines
Super Thrift Grocery Receipts
Used eye glasses
Large shopping bags
Jeans and Overalls

Each member was given a list of the items and a calendar to make it easy to keep track of the recycled items. At the end of the year this calendar made it easy to see how much "trash" each member, and the entire county, kept from being disposed of in landfills.

**Impact:**
Ten cell phones were donated to the McClain County Sheriff's Department to be given to domestic abuse victims and senior citizens to enable them to call 911. To aid county schools, "Box Tops for Education" from *Betty Crocker* products, *Campbell Soup* labels and newspapers, catalogs and magazines were collected. These items help raise money to buy playground equipment and classroom supplies. Total items saved included: 921 Box Tops for Education, 619 *Campbell Soup* Labels, and 33,963 newspapers and pieces of junk mail.

A local grocery store chain donates 1% of net grocery receipts collected by non-profit organizations to that organization. OHCE members gave their receipts to the church or charity of their choice, and 1,685 receipts were saved for these organizations.

The aluminum cans collected were given to the Senior Citizen Centers in Purcell and Blanchard. They used the money for their activity fund. Cans recycled totaled 16,356.

McClain County Lions Clubs collect used eyeglasses. These are sent to an organization that repairs them, then distributed to foreign countries to be given to people who have no other means of obtaining eyeglasses. Fifty-nine pair of glasses were donated. Operation Christmas is a county-wide project which provides food and toys to disadvantaged families at Christmas. Volunteers need large opaque shopping bags for distributing the toys. The opaque bags enable the parents to take home the gifts without the children being able to see what is in them. Bags saved totaled 671. Members made jeans quilts, vests and Christmas Stockings from old jeans and overalls, which were used as gifts or personal items. Sixty-nine pairs of jeans were utilized, thus keeping them out of the landfills. To encourage others to help with the recycle program, two new classes were added to the McClain County Free Fair. These were "a recycled garment" and "a craft made from a recycles item". The nine items entered in the fair helped people to understand the importance of recycling. All of these projects were enjoyed by the OHCE members. The items saved would have been disposed of, so by recycling them, numerous groups and individuals were helped. Ninety-nine members were able to participate.

**Source of Funding:** County, State, Smith-Lever

**Scope:** County-wide

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**Title: Building Leaders of Tomorrow**

**Issue:**
Many of the youth in our communities across the state are not receiving adequate leadership training in their communities. This has been attributed to the erosion of the family support systems in our society and the value placed upon civic engagement. Many of our youth do not spend the quality time with their parents or do not have a positive role model in their home to model the behavior needed to learn the valuable life lessons that develop good character and leadership skills. Thus, many of our youth do not understand in importance and value of civic engagement and the positive impact they can have on their community.

**What Has Been Done:**
The Oklahoma Cooperative Extension Service selected the Building Leaders for Tomorrow project to address the needs of developing youth that are engaged in community civic projects. The objective and description of BLT are the following: 4-H will help provide leadership to assist urban and rural communities in strengthening their human capital by recruiting and training teams

of teens and adult mentors in the areas of Youth in Governance, Youth-Adult Partnership and Service-Learning. Following a series of activity based lessons; teams are identifying a community need and complete and carry out a Plan of Action. We are tracking through short evaluations that: and long term evaluation of youth in urban, rural and underserved communities' enrolled in grades 4-12, to determine whether they have learned and are applying the skills necessary for working as partners with community leaders and becoming invested in their communities through civic engagement.

**Impact:**
The Building Leaders for Tomorrow– Leadership and Community Development Initiative Team programs and activities are promoting positive youth development, including 4-H. These activities extend knowledge to youth and convey a sense of belonging, teach life skills, and provide opportunities for mastery, competence, and independence. This work also includes a focus on the social and emotional development of program participants.

- Creates a stronger sense of community, more civic engagement and pride
- Creates valuable assets to a community; monetarily, emotionally and motivationally
- Educates and empowers citizens, encouraging them to be involved

**Teen Volunteers:**

- 74% of youth who volunteer do so through a religious, school-based or youth leadership organization
- Youth who have a parent that volunteers are almost twice as likely to volunteer themselves
- 63% of youth in a nationwide YMCA survey said they wanted programs that built leadership skills and allowed them to work with diverse audiences

**Adult Volunteers:**

- 29% of the civilian non-institutional population age 16 and over, volunteered through or for organizations at least once from September 2003 to September 2004
- Persons age 35 to 44 were the most likely to volunteer, closely followed by 45- to 54-year olds and then 55- to 64-year olds
- Most adult volunteers volunteer for only one or two organizations at a time

**Other impact areas of work include but are not limited to:**

- Literacy, communication, problem solving, and other life skills
- Self confidence and self esteem
- Interaction and relationships with adults and peer groups
- Civic engagement (connecting youth to government and institutions)
- Leaderships development and leadership opportunities for youth
- Sense of belonging/ sense of safety
- Youth initiatives in non-formal science, engineering, and technology
- Volunteerism and community service for youth
- Youth policy
- Building Leaders for Tomorrow is an on going project for six years. We are progressively working to implement Building Leaders for Tomorrow in Oklahoma County 4-H Program and other youth programs.

**Funding Source(s):** State, Smith-Lever, National Colgate Youth Award, Oklahoma County Assessor's Office

**Scope of Impact:** Oklahoma County

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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.

During 2006, the DASNR Team Initiative Program moved ahead. All teams came together in a day-long planning session. In addition, most teams met several times throughout the year. County, area and state staff and research scientists shared input they receive from grassroots clientele, commodity groups, and the scientific community. This process helped set direction for the 2007-2011 OCES and OAES plan of work submitted to CSREES.

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) Periodic strategic planning process for OCES and OAES. 3) Extension also regularly seeks input from commissions, agencies, groups, foundations and other organizations representing various segments of the Oklahoma public. 4) Many key program components and programs within those components have advisory groups made up of stakeholders. 5) 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. However, we have begun to consider means of better reviewing and verifying some reports and departmental papers offered as research and extension information in fulfillment of grants and contracts. During 2006 considerable effort was undertaken by the DASNR Initiative Teams to review situation, needs and current projects for the 2007-2011 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). Considerable effort in integrated activities relating to meat goat production reached small farmer and ethnic producer audiences. Integrated activities related to alternative crops (vegetables, watermelons, canola, 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 allow 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**
**Actual Expenditures of Federal Funding for Multistate Extension and Integrated Activities**
(Attach Brief Summaries)
**Fiscal Year: 2006**

**Select One:** ** [X] Intermin [X] Final **
**Institution:** Agricultural Experiment Station and Cooperative Extension Service
**State:** Oklahoma

| | Integrated Activities (Hatch) | Multistate Extension Activities (Smith-Lever) | Integrated Activities (Smith-Lever) |
|---|---|---|---|
| ***Established Target %*** | 9.2 % | 5.7 % | 8.1 % |
| ***This FY Allocation (from 1088) (Hatch column is Hatch plus Multi-State)*** | $2,890,442 | $5,096,446 | $5,096,446 |
| ***This FY Target Amount*** | $265,921 | $290,497 | $412,812 |
| **Title of Planned Program Activity** | | | |
| An Agricultural System that is Highly Coompetitive in the Global Economy | $196,304 | $120,855 | $495,625 |
| A Safe and Secure Food and Fiber System | $0 | $0 | $0 |
| A Healthy , Well-nourished Population | $0 | $4,955 | $0 |
| Greater Harmony Between Agriculture and the Environment | $62,196 | $40,945 | $17,761 |
| Enhanced Economic Opportunity and Quality of Life for Americans | $48,734 | $84,031 | $119,993 |
| | | | |
| | | | |
| | | | |
| **** Comment: This report is Final for Hatch and Interim for Smith-Lever** | | | |
| **Total** | $307,234 | $250,786 | $633,379 |
| **Carryover** | $0 | $39,711 | $0 |

**Certification: I certify to the best of my knowledge and belief that this report is correct** and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.

## Reports

### CSREES Goal 1: Integrated Activities

**Name of Planned Program/Activity:** Commercial Horticulture Food Crops

**Progress Report**: Projects during 2006 included efforts directed at evaluation of vegetable germplasm including cowpea, melon, and snapbean, screening of new weed control materials for use in basil, cilantro, cowpea, dill, pepper, and spinach crops. Detailed results of these studies are included in the 2006 Vegetable Trial Report MP-164 and are available through the Department of Horticulture at Oklahoma State University and on-line at: http://www.hortla.okstate.edu/hortla/vegtrial.htm.

**Other States Involved:** California, New York, Ohio, Texas, Arkansas

**Contact:** Lynn Brandenberger

**Name of Planned Program/Activity:** Organic Vegetable Production

**Progress Report:** Scientists at the Wes Watkins Agricultural Research and Extension Center in Lane, Oklahoma are continuing a project involving certified organic vegetable production in Oklahoma. Research and extension personnel from Oklahoma State University, as well as scientists from USDA/ARS/SCARL, are working jointly in this program. The project is now beginning its fourth year of research and extension activities. In 2003, land that previously had been planted with Virginia Pine was cleared, and preparation began for future organic vegetable research studies. Soil tests were taken, and lime was applied according to recommendations. Poultry litter was used as a fertilizer, and a cover crop of turnips was planted. In 2004, the land was partitioned into four sections, with tomatoes, sweet corn, southern peas, and watermelon being grown on respective quadrants of the land. All cultural practices and all materials used on the designated land are in compliance with the National Organic Program. Records were kept of pest problems, severity of problems, cultural techniques used, and crop yields from each quadrant of the field. The study was continued in 2005 and 2006. The same crops were grown each year, with each crop being rotated to the plot adjacent to the area in which it had been grown the year before. A field day was held in June, 2004, again in June, 2005, and again in June, 2006 to demonstrate the problems and solutions associated with each crop to growers and consumers. Results were also presented at the Oklahoma-Arkansas Horticulture Industries Show in Tulsa, OK in January of 2006. Written reports were published in the Horticulture Industries Show Proceedings. The Wes Watkins Agricultural Research and Extension Center applied for and received certification as an organic agriculture facility in December of 2005. The Center is currently the only public facility in Oklahoma to have attained such certification. Various scientists from the Lane Agricultural Center are working with the Oklahoma Organic Growers Association to determine the major obstacles to organic vegetable production, to determine solutions to these obstacles, and to present this information to growers and association members.

**Contact:** Warren Roberts

**Name of Planned Program/Activity:** Adding value to feeder cattle

**Progress Report:** Frequently, cow-calf producers sell calves at weaning, in the seasonally lowest price month of the year. As part of the Master Cattleman educational program, producers are taught about seasonality of prices and value-enhancing alternatives such as preconditioning calves prior to marketing. Research is underway to estimate the value of preconditioning programs for cow-calf producers. One manuscript will be published in 2007 in the *Journal of the American Society of Farm Managers and Rural Appraisers* on the price premiums buyers paid for calves preconditioned and sold at special Oklahoma Quality Beef Network sales. Related research is in progress to estimate the value of source-verified, BVD-tested, and preconditioned calves which are part of the Noble Foundation's Beef Production System program. In addition, the same study is identifying key factors affecting costs and returns for preconditioning for producers in the Noble Foundation program. Results from this research will be published in extension publications and submitted for peer review in 2007.

**Contact:** Clement Ward

**Name of Planned Program/Activity:** Cow-calf management practices by Oklahoma producers

**Progress Report:** Producers receiving the Oklahoma Beef Cattle Manual complete a questionnaire identifying the management practices they currently use in their cow-calf operation. This is one part of the Master Cattleman educational program. Research has taken the survey data and analyzed production practices by two groups of producers. Group 1 is comprised of producers with 100 or fewer commercial cows who depend on less than 40% of their household income from their cattle operation. Group 2 consists of producers with 100 or more commercial cows who depend on more than 40% of their household income from their cattle operation. Research has found significant differences in cow-calf management practices in all areas of cow-calf enterprise management and nearly all production practices between the two groups. This information is being used to help identify what production practices producers in the smaller, less dependent group might undertake to increase profitability and sustainability of the cow-calf enterprise. Results from this research will be published in extension publications and submitted for peer review in 2007.

**Contact:** Clement Ward

**Name of Planned Program/Activity:** Determining the Potential Role of Roundup Ready Alfalfa in Oklahoma

**Progress Report:** Four different types of trials were initiated to help determine the role of Roundup Ready Alfalfa in Oklahoma: 1) RR and seeding rate, 2) RR vs conventional alfalfa, 3) RR variety performance, and 4) grazing RR alfalfa. The increase cost of establishment of RR alfalfa can be off set by reducing the seeding rate and maintain enough stand to have good yield. Due to dry weather only one of three comparisons of RR alfalfa to conventional alfalfa herbicide/variety was positive. When dry weather suppressed weeds the RR technology was not an advantage. In general RR varieties produce somewhat lower yields than good conventional varieties. RR grazing alfalfa appears to have much promise for improving the successful establishment of alfalfa into pastures for grazing. A targeted initiative program of research and

extension enabled a team of researchers and extension personnel to explore this new technology. Results of this activity have been featured in the Oklahoma Forage Newsletter, and text, tables and images of results are presented on the web at http://alfalfa.okstate.edu/images/RRAlfalfa/roundup_ready_alfalfa_report.htm

**Contact:** John Caddel, Plant and Soil Sciences Department

**Name of Program/Activity:** OK-FIRE: A Weather-Based Decision Support System for Wildland Fire Managers in Oklahoma

**Progress Report**: This is an exciting new project, with both research and extension aspects, that was funded in 2005 from the USDI/USDA Joint Fire Science Program ($320,926 over 3 years). Terry Bidwell of Natural Resource Ecology and Management is co-PI. Using the Oklahoma Mesonet of automated weather stations as a basis for current and past conditions, the project has a three-fold emphasis: (1) an expanded suite of products for fire weather, fire danger, and smoke dispersion which incorporate an 84-hour predictive component; (2) a dedicated OK-FIRE wildland fire management web site to act as the delivery mechanism for the above products; and (3) regional training and customer support activities for the user groups involved. Programming support and web site development is provided by the Oklahoma Climatological Survey (OU) in Norman, OK. User groups in the project include the following federal, state, and private agencies within the wildland fire management community in Oklahoma: USDA Forest Service, Bureau of Indian Affairs, US Fish and Wildlife Service, National Park Service, US Army Corps of Engineers, National Weather Service, Oklahoma Forestry Services Division, and The Nature Conservancy. In 2006 a prototype, password-protected OK-FIRE web site was developed (***http://okfire.mesonet.org***) along with new and expanded products. In addition, eight one-day computer workshops were conducted around the state during the fall. Over 100 participants from our user groups attended. Feedback on the web site and products has thus far been very favorable. OK-FIRE is an important project as it provides real-time and forecast tools for wildfire anticipation and management, as well as for planning and conducting prescribed burns.

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

**Name of Planned 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 117 automated stations reporting weather data every 5 minutes and soil data every 15 to 30 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, products include models for fire danger, atmospheric dispersion, evapotranspiration, insect pests, disease pests, and livestock heat/cold stress. Programming support for these products is provided by the Oklahoma Climatological Survey in Norman, OK. These products are available on the Oklahoma AgWeather web site (***http://agweather.mesonet.org***). Extension and outreach efforts for the Oklahoma Mesonet and its Web-accessible products continued in 2006, via trade show exhibits,

educational programs, and development of educational print and CD materials.

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

**Name of Planned Program/Activity:** Development of a Weather-based Model for Predicting First Hollow Stem in Winter Wheat

**Progress Report**: This project, ongoing in 2006, has as its goal the development of a weather-based model for predicting a particular growth stage of winter wheat, called "first hollow stem" (FHS). Past research by others has indicated that this stage is an indicator of when to remove cattle from grazed wheat fields. The same research has shown that grain yield decreases dramatically (a daily decrease of 1.25 bushels/acre) as cattle are left on grazed fields after the occurrence of FHS. Ten years of FHS data at several Oklahoma locations are being utilized in model development, while ongoing scouting in other locations has occurred over the past several years. In 2006, using the optimal soil-temperature based models for FHS developed in 2005, model FHS predictions were compared with independent FHS observations from 2004 to 2006. More FHS observations are being collected in 2007. Except for 2006, whose winter months were the second driest in Oklahoma since 1895, the model predictions outperformed the traditional calendar-based method. The ultimate goal is to produce a model that can be implemented operationally on the Oklahoma Mesonet.

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

**Name of Planned Program/Activity:** Conservation Reserve Program

**Progress Report:** This program has contracts on nearly 35 million acres nationally and over one million acres in Oklahoma with Oklahoma farmers holding contracts worth over $33 million annually. No use of the CRP land is permitted except by Secretarial discretion during period of extreme drought. Recently my research has developed a method where these lands may be put into use, maintain water and air quality and enhance wildlife habitat while providing economic activity for the rural communities. If employed, CRP lands could help ease the current tight supply in of feed grains and grazing areas, particularly in the Southern Plains. In addition to extension meetings and training for extension educators this research resulted in policy briefings, to explain legislation, the legislative process or implications of legislation.

**Contact:** Mike Dicks

**Name of Planned Program/Activity:** Evaluation of Corn Maturity under Limited Irrigation

**Progress Report:** A research study was conducted to evaluate the affect of corn maturity on yield under limited irrigation. Four corn varieties were selected with relative maturities ranging from 92-day to 116-day and were planted April 17, 2006 at the rate of 27,000 seeds per acre. The experiment was established as a randomized complete block design with four replications. The plot size was 10 feet by 35 feet. Irrigation was limited to 50% of normal (8.5 inches), 75% (13.8 inches) and 100% (17.5 inches). Corn yield increased as irrigation amount increased (averaged across all varieties). Corn averaged 91 bushels/acre at the 100% irrigation. When evaluating the affect of maturity (averaged across all irrigation treatments) the 108-day variety yielded the best

(81.6 bushels/acre). Also, test weight increased with irrigation and with maturity. It is generally thought that corn with relative maturities of about 108-days are best adapted for the Oklahoma panhandle. This data suggests that even under reduced irrigation 108-day maturity will perform better than earlier or later maturing varieties.

**Contact:** Curtis Bensch

**Name of Planned Program/Activity:** Integrated Wine Grape Research and Outreach in Oklahoma

**Progress Report:** The Oklahoma grape industry has experienced a resurgence of interest and enthusiasm during the last several years. Interest has come from wineries, grape growers, and others 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. Potential exists for Oklahoma vineyards and wineries to add value to the Oklahoma economy by producing grapes and making and selling wines locally. Demonstration/research projects are on-going to secure reliable data on grape variety adaptability and pest management requirements in the various regions of Oklahoma. Data have been collected from research and demonstration plantings on grape variety adaptability, as well as insect and disease incidence at four locations in OK, and results disseminated to growers through various outlets, including newsletters, extension presentations, field days, short courses, and peer reviewed journals. Several crucial integrated activities that combine research and extension include the Oklahoma Grape Management Course that has been designed and offered seven times. The course meets seven times per year for a period of four hours. Also, a comprehensive viticulture education program was also started, incorporating courses being taught at OSU-Stillwater, OSU-OKC, Tulsa Community College, and through OSU cooperative extension. Statewide meetings for grape growers have been held in various locations throughout Oklahoma involving almost 500 participants in 2006. A grape related newsletter was initiated in 2006, an Oklahoma Vineyard Management Guide was published electronically in 2005, and economic budgets have been prepared to assist potential grape growers with decision making.

**Contact:** Eric T. Stafne

**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 1,403 commercially available and 3,113 experimental turfgrass varieties across 21 species for adaptation to lawn, roadside, parks & grounds, golf course and sod production applications in OK during the last 17 years. Research continued in 2006 regarding cultivar testing and proper management. Five 5-year duration trials on 9 species concluded in 2006. Research results are used directly by the turfgrass specialist or end user when making recommendations concerning turfgrass selection for a given site. Over 500 consultations were conducted in 2006 via phone, fax, US mail, email and site visits concerning selection, installation and management of the best adapted turfgrass varieties. During phone

consultations, approximately 82% of clients indicated that they would pursue purchase and installation of the newer better adapted cultivars as suggested by the turfgrass specialist. This percentage is expected to continue to rise once addition stocks of newly released cultivars increase to fill market demand and prices of new materials stabilize and mature. Approximately 402 professionals and consumers received training on proper turfgrass selection and management in 4 workshops and conference conducted in the region during 2006. During new construction and renovation of speciality turf areas such as golf courses and athletic fields, better-adapted turfgrass varieties are being utilized in over 85% of cases in Oklahoma. Fungicide use for dollarspot disease control has been reduced by at least 10% (2 applications) when L-93, A-1, A-4 and G-2 creeping bentgrasses have been implemented on golf course putting greens in Oklahoma. This has resulted in an estimated savings of $63,000 per year total on all Oklahoma Golf Courses. Patriot hybrid bermudagrass, an improved OSU release, was installed on an additional two college stadium fields and two NFL practice facilities in the U.S. during 2006. For golf courses that treat with fungicides for spring dead spot disease, a 30 acre fairway facility would save a minimum of $3,900 in fungicide use per year per facility by using an improved OSU bermudagrass variety as compared to an older susceptible variety acquiring the disease and requiring treatment. Sod producers utilizing a licensed OSU improved bermudagrass variety could expect to experience an additional minimum of $6,500 in profits per year (after all additional costs are accounted for over and above public domain bermudagrass production) in a scenario of 30 acres of proprietary variety production/sales per year.

**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. Seven multi-year trials that screened 128 bermudagrasses for SDS disease resistance have been completed. Three trials testing 52 varieties remained underway in 2006. Ten varieties with good or very good SDS disease resistance have been identified thus far in our multi-state cooperative effort with Kansas State University, Colorado State University, and Jacklin-Simplot Corporation with five of these varieties commercially available in the region. A sixth variety was placed on an experimental plant materials transfer agreement to seek sod farmer input on potential for commercialization of the new variety. A demonstration lawn of OSU Experimental Patriot bermudagrass, a vegetatively propagated variety with improved cold hardiness and increased SDS disease resistance, was developed at Oklahoma State University (OSU), commercially released in 2002, and was granted US Plant Patent protection in 2006. Growers were recruited and licensed such that sales of Patriot to the consumer commenced in Maryland (late 2003), Oklahoma (2004), and Missouri (2005), Tennessee (2006) and North Carolina (2006). Licensees are opening additional production facilities in 2007 in Virginia.

Riviera seeded bermudagrass, developed and released by Oklahoma State University continues to gain in popularity in the US and has now been used on athletic facilities in the U.S., Japan and Italy. Three licensees of Riviera sod are now in place across the US in order to meet the demand for sod of this variety when high erosion potential of sites precludes the use of seed. Four high visibility college stadium fields in Oklahoma have now been converted to the newest and best adapted bermudagrass varieties over older common types. Proper varietal selection information as

well as integrated management strategies for SDS management was transferred to 350 turf industry leaders at 3 state/regional conferences 6 master gardener training sessions, the 6th AR-OK Turfgrass Short Course, and the 61st Annual Oklahoma Turfgrass Conference. All attendees (100%) indicated that they would integrate our recommendations into their existing programs to manage the 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. For golf courses that treat with fungicides for spring dead spot disease, a 30 acre fairway facility would save a minimum of $3,900 in fungicide use per year per facility by using an improved OSU bermudagrass variety as compared to an older susceptible variety acquiring the disease and requiring treatment. Sod producers utilizing a licensed OSU improved bermudagrass variety could expect to experience an additional minimum of $6,500 in profits per year (after all additional costs are accounted for over and above public domain bermudagrass production) in a scenario of 30 acres of proprietary variety production/sales per year.

**Contact:** Dennis Martin

**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 experiments as well as large scale demonstrations in Oklahoma. 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. Two powerpoint presentations titled “The Art of Harvest Aids” and “The Science of Harvest Aids” have been prepared, updated, and presented to producer groups in Oklahoma and Kansas. Activities during the 2006 crop year include six replicated and three large scale strip research and demonstration plots, applied by OSU primarily on cotton grown by local producers. Five presentations on timing and materials were given to producers prior to the application season, and two field tours showing plot results were presented to producers. Three “caravan” tours in Canadian, Beckham, and Caddo counties were conducted in cooperation with county extension educators. Weekly newspaper articles were written and distributed to 27 newspapers in cotton producing areas in Oklahoma and Kansas. 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:** Dr. J. C. Banks

**Name of Planned Program/Activity:** Evaluating Byproducts of Bio Fuels Production as Alternative Feed Sources for Beef Cattle

**Progress Report:** During 2006, a multidisciplinary educational thrust was initiated to assist producers in evaluating the impact of rapidly growing ethanol production on the beef cattle industry. Corn use in ethanol production has resulted in dramatic increases in corn prices and therefore the cost of feeding and supplementing livestock. An important related issue is the

dramatic increase in availability of distiller's dried grains, one of the major byproducts of ethanol production. For every bushel of corn used in ethanol production, 18 lb of distiller's dried grains are produced. Livestock producers are keenly interested in using this high quality feed as a protein and energy source, although it is a relatively new feed source in Oklahoma and has several limitations that many producers are unaware of. A slide presentation dealing with the availability of DDGS, nutritive value, incorporating DDGS in to beef cattle diets, handling issues and feeding limitations was developed and shared with other state, area and county educators. Dr. Lalman participated in ten educational meetings at the national, statewide, regional and county levels. One study was conducted to evaluate the use of DDGS to replace cottonseed meal in the Oklahoma Gold supplementation program. Additionally, a study was conducted to evaluate the use of DDGS in a post-weaning nutritional program for a 60-day period. These experiments will be continued in 2007 and a cow supplementation project will be initiated. Results of these experiments are being shared with educators and will be published in the Animal Science Research Report.

**Contact Name:** David Lalman

**Name of Planned Program/Activity:** Effect(s) of the Bird Cherry-Oat Aphid (*Rhopalosiphum padi*):Barley Yellow Dwarf Virus Complex on Winter Wheat

**Progress Report:** The effect of bird cherry-oat (BCO) aphids carrying barley yellow dwarf virus (BYDV) or not carrying BYDV on five winter wheat varieties (Karl 92, 2174, Ok 102, Coker 9663, and Roane) was studied in a replicated field trial during 2004-2005. Following infestation with aphids, insect cages were used to retain and separate viruliferous (VIR) from aviruliferous (AVR) BCO aphids and to protect non-infested controls from being infested with aphids. Aphids were counted 21 days after infestation, cages were removed and aphids were killed with an insecticide. Plots were then sprayed as needed to exclude reinfestation by aphids. Forage production was measured once in November. BYDV incidence (percentage of plot showing BYDV symptoms), severity (scale of 1-7), number of fertile heads, yield and thousand kernel weight (TKW) were determined in 2005. None or few aphids (<1 aphid/tiller) were found in non-infested control plots, but counts of 100-200 aphids/tiller were typical in infested plots. For all varieties, forage production from plots infested with AVR or VIR BCO aphids was significantly reduced as compared to non-infested controls. BYDV was observed in nearly all plots (incidence), but was most severe in Karl 92, which is considered susceptible to both aphids and BYDV. Fertile heads, yield and TKW were all significantly lower in AVR and VIR aphid infested plots, but differences observed between AVR and VIR aphids were minimal. Hence, in this trial the impact appeared to be related more to the presence of aphids rather than to BYDV, but this may be a result of the extremely high numbers of aphids that occurred on young plants following infestation in the fall.

**Contact Name:** Robert M. Hunger

**CSREES Goal 4: Integrated Activities**

**Name of Planned Program/Activity:** Joint Research and Extension Directed at Pest Management Technology-Transfer Relative to Biology, Ecology, and Pest Management of Wooden-Structure-Destroying Subterranean Termites – CY 2006

**Progress Report:** Field and laboratory studies on termite foraging, food preferences, taxonomy, distribution, soil-movement capabilities, cuticular hydrocarbon profiles, primary protein 2-D gel electrophoresis determinations, and life habits on native tallgrass prairies are actively being studied. These studies are centered in Oklahoma, but are national and international in scope, and include environmentally safe termite baits, new technology non-repellent termiticides, innovative termiticide application protocols, physical exclusion barriers, termite-resistant building materials, and fate of termiticides in soil. Pest management professionals continued to be trained at the Pinkston Education Facility for Structural and Urban Pest Control located on OSU's Stillwater Campus. The program provided 27 scientific presentations at technical conferences, workshops, training sessions, and presentations. These ranged from presentations at scientific meetings to classroom and field training for certified pesticide applicators. Additionally, 22 Oklahoma "Experimental Use Permit" (EUP) structures are in a program to evaluate new termite control methodologies that could lead to reduced pesticide use. This is a USEPA and State of Oklahoma (ODAFF) approved program that is conducted by Kard (OSU) to evaluate new methods in protecting wooden structures and building components from termites. Two peer-review scientific papers were published, one addressing termite pest management, and one addressing the resurgence of Bed Bugs across the US. Four technical papers/proceedings, and five technical abstracts were published. Three additional peer-review scientific papers concerning ecology, biology, and management of subterranean termites were submitted to journals and are in process. Teaching IPM practices improved sanitation and insect pest management practices around structures and improved building monitoring and inspection to eliminate conditions that are conducive to termite infestation, leading to cost reductions for termite control.

**Impacts**:

1. 127 Oklahoma structural pesticide applicators received training at OSU, achieving pesticide applicator certification for general and structural arthropod pests.

2. 1,432 pest management professionals received training at 14 Conferences and Workshops across Oklahoma and nationally.

3. A continuing field survey to search for the exotic and destructive Formosan termite, as well as indigenous termites. Not found during 2006, but remains a pending destructive threat.

4. Two scientific papers, four extension technical papers, and five scientific abstracts were published, reaching 10,000+ readers.

**Contact:** Brad Kard, Dept. of Entomology and Plant Pathology

**CSREES Goal 5: Integrated Activities**

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

**Progress Report:** This research project continues to develop tools that Extension personnel can use in Oklahoma and across the U.S. The tools can be classified into two categories; (1) impact models and (2) community service budgets. The impact models have been developed to measure the economic impact of the health sector components on the economy. State and local impact

models have been developed. These models have been shared with health professionals across the U.S. through the National Rural Health Works Center, which is managed by OSU. Additional health impact analyses were completed for measuring the impact of a rural physician on a local economy and the impact of Medicaid on a state's economy. Community service budgets are underway for telemedicine. A budget procedure was developed for specialty physicians. These tools allow Extension to work with community leaders in determining how to provide essential services within their financial constraints. Budget studies were completed in about 25 communities in Oklahoma in 2006.

**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. Typically, the report is prepared on campus and then provide electronically to the local extension educator and the area CD specialist for presentation. Over the past year there were 14 gap reports prepared. These reports included analysis for 29 communities because sometimes all communities in a county were analyzed. Community leaders express satisfaction with this customized research report. The Oklahoma Department of Commerce frequently refers community leaders to OSU to provide this research-based service. Several communities report successful local retail development efforts which have utilized the data and report.

**Contact:** Mike D. Woods

## CSREES Goal 1: Multi-State Activities

**Name of Planned Program/Activity:** Multi-State Cooperative Projects 2006

**Progress Report:** Multi-state projects during 2006 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 2006 Vegetable Trial Report MP-164 and are available through the Department of Horticulture at Oklahoma State University and available on the web at: http://www.hortla.okstate.edu/hortla/vegtrial.htm.

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 2006 13 advanced breeding lines were included in the replicated trial and 16 in the observational trials at the Bixby Vegetable Research Station.

Weed control research and demonstration work during 2006 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). During 2006, 15 different study/demonstrations were carried out throughout the state and included work on basil, cilantro, cowpea, dill, and spinach. Detailed results of these

studies are include in the 2006 vegetable weed control studies in Oklahoma MP-164 also available on the web at: http://www.hortla.okstate.edu/hortla/vegtrial.htm.

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

**Contact:** Lynn Brandenberger

**Name of Activity/Program:** Farm Transitions Workshop

**Progress Report:** With funding support from Risk Management Education, Kansas State University and OSU are partnering to offer a series of two-day workshops to families planning a transition of farm management and/or ownership to a second generation. Project leaders participated in national training in Des Moines in fall 2006. Planning meetings were then held and curriculum development was begun. The workshops are scheduled to be held in March and April, 2007 in Enid.

**Contact:** Damona Doye

**Name of Planned Activity/Program:** North Central Farm Management Extension Committee (NCFMEC)

**Progress Report:** The NCFMEC identifies opportunities to collaborate on projects and publications plus work with the Center for Farm Financial Management to improve and expand website offerings of materials developed. This year, the NCFMEC together with the National Association of Farm Business Analysis Specialists (NAFBAS) and the National Farm & Ranch Business Management Educators Association (NFRBMEA) are jointly sponsoring a national farm management conference designed to provide financial and tax consultants, extension educators, university personnel, and allied professions with information useful in working with agricultural managers. Topics at the conference will cover aiding producers in responding to changes in government policies, tax changes, family transitions, and consumer demand shifts. I served as vice-chair of the North Central Farm Management Extension Committee January-May, 2006 and as Chair from May through present.

**Contact:** Damona Doye

**Name of Activity/Program:** Southern Agricultural Economics Association

**Progress Report:** SAEA is a regional professional association that offers professional development opportunities through annual meetings and publication of the Journal of Agricultural and Applied Economics plus offers peer recognition through awards. The annual meetings included invited papers, selected papers and posters, and organized symposia for professionals plus an academic quiz bowl for students. The association has approximately 400 members. I served as president-elect of the Southern Agricultural Economics Association February 2005-February 2006, then began my year-long term as president.

**Contact:** Damona Doye

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

**Progress Report:** In 2006, the committee cooperated with the Internal Revenue Service (IRS) to review, edit, and distribute the 2006 IRS Publication 225, "Farmer's Tax Guide" that has been distributed to approximately 300,000 agricultural producers and tax preparation professionals across the nation. Participants from more than 20 states are represented on the committee. The participating members represent both extension and research appointments in their respective states. These activities are conducted under a Memorandum of Understanding between USDA and IRS. This committee meets with IRS staff 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 Committee on Taxation about agriculturally related taxation problems and issues as well as gain insight into upcoming legislative proposals.

**Contact:** J C. Hobbs

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

**Progress Report:** In 2006, representatives from more than 20 states cooperated to develop tax related educational material and conduct seminars and workshops for both farm and non-farm tax practitioners. More than 30,000 tax preparers and other professionals attended these sponsored seminars nation wide. The National Income 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 various tax school instructors. Educational materials were used in 30 states. The Land Grant University Tax Educational Foundation, (LGUTEF) coordinates and enhances the effectiveness of national and state tax education activities by land grant university professionals.

**Contact**: J C. Hobbs

**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.

Fifty-one turfgrass managers were trained on proper turfgrass selection techniques during the 2006 Oklahoma - Arkansas turf short course. The total number of trained professionals from Oklahoma, Arkansas, Kansas, Missouri and Texas during the first five years of the joint-state turf short course is 358. All managers indicated that they would use the information in making proper turfgrass

selection decisions. An Arkansas-Oklahoma turf short course manual and digital presentation were updated to meet region-specific needs. These resources are used as a corner stone in employee training in fifteen lawn care enterprises, two national/international seed-sales enterprise and five University grounds divisions in Oklahoma, Arkansas and Missouri.

An Arkansas-Louisiana-Oklahoma-Texas Centipedegrass and St. Augustinegrass sod producer directory was finalized in 2006 to serve the four-state area. A five year long spring dead spot disease screening was completed in 2006. This effort involved scientists from Colorado State University, Kansas State University and Jacklin-Simplot Corporation (Oregon). Forty-eight varieties were screened for SDS resistance and extension news releases are being prepared to get the information into the hands of end-users.

A 2002 on-site turf production demonstration in Maryland continues to pay dividends in educating consumers regarding the adaptation of OSU bermudagrass products such as Patriot bermudagrass. The site was expanded to include OSU experimental OKC 70-18 bermudagrass in 2006. Foundation pedigree stock from the Patriot bermudagrass plot was also used to start new licensee farms in 2005. Two additional licensed producers of Patriot hybrid bermudagrass were recruited in 2005, these being in Tennessee and North Carolina. Patriot bermudagrass production is now occurring in five states. Existing licensees plan on opening new farm facilities in Kentucky and Virginia in 2007. Sod producers utilizing a licensed OSU improved bermudagrass variety could expect to experience an additional minimum of $6,500 in profits per year (pure profit after all additional costs are accounted for over and above public domain bermudagrass production) for each 30 acres of proprietary variety sold. Patriot has improved cold hardiness and improved resistance to spring dead spot disease while matching or exceeding the quality of existing industry standards. Patriot was installed on an additional two college stadium fields and two NFL practice facilities in the U.S. during 2006. For golf courses that treat with fungicides for spring dead spot disease, a 30 acre fairway scenario would save a minimum of $3,900 in fungicide use per year per facility by using an improved OSU bermudagrass variety as compared to an older susceptible variety acquiring the disease and where the manager chose to treat with fungicides.

**Cooperators:** Turfgrass programs at the University of Arkansas, the National Turfgrass Evaluation Program, United States Golf Association, the Golf Course Superintendents Association of America and Oakwood Sod Farm in Salisbury, MD.

**Contact:** Dennis Martin

**Multi-State Activity/Program Title:** eXtension Community of Practice - Cotton

OCES Team Most Representative of Multi-State Effort: The community of practice is composed of State Extension Cotton Specialists from all cotton producing states

Knowledge Area(s) Representative of Multi-State Effort:
Focus of the Multi-State Activity/Program (one or two sentences):
The mission of the Extension Cotton Specialists Community of Practice in eXtension is to serve as a multi-state team to focus on high priority needs of the cotton industry, and to be a central source of information dealing with current issues across all cotton producing areas in the United States.

Does this program/activity integrate research and extension? Yes

Other States Involved: Virginia, North Carolina, Georgia, Alabama, Tennessee, Florida, Louisiana, Mississippi, Texas, Kansas, Arkansas, Arizona, New Mexico, California

**Contact:** J. C. Banks

**Name of Planned Program/Activity:** Wheat Pasture and Grain Symposium

**Progress Report:** The Southern Wheat Research and Education Consortium (SWREC) and the Noble Foundation are organizing an international symposium on the management of dual-purpose wheat. The SWREC is a group of university and USDA-ARS scientists from OK, TX, NM, KS, and CO who work with dual-purpose wheat production. Disciplines represented include crop physiology, plant breeding, plant pathology, agricultural economics, entomology, and animal science. The 2007 international symposium will be held in Ardmore, OK on August 2 &3 and we are expecting approximately 100 scientists to be in attendance. We are currently recruiting researchers from the southern Great Plains, Australia, and Argentina to present research findings. In addition, we will include a grower panel and include information from the symposium in newsletters and other extension materials. A proceedings of the symposium will be published in the fall of 2007.

**Contact:** Jeff Edwards

**Name of Planned Program/Activity:** Oklahoma State University and Kansas State University Winter Canola Program

**Progress Report:** The collaboration with KSU in 2006 was very successful. In July 2006, faculty from both Oklahoma State University (OSU) and KSU cooperated on three winter canola production meetings. One meeting was held in Kansas and two meetings were in Oklahoma. A total of approximately 500 producers in the region attended these meetings that were interested in canola production. I collaborated with several KSU faculty members on two proposals that were submitted to the U.S. Canola Association. In addition to these activities, several research studies were initiated in an effort to improve our current production recommendations. Studies were conducted in both Oklahoma and Kansas.

**Contact:** Chad Godsey

**Name of Planned Program/Activity**: SERA-IEG-6 Methodology, Interpretation, and Implementation of Soil, Plant, Byproduct, and Water Analyses

**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. The 2003 Annual Meeting was held in Clemson, SC from June 5 to 7 to exchange

ideas, discuss common issues. Nearly 30 participants representing 12 southern states and 2 from other regions attend the meeting. I presided at the 2006 meeting and will organize the 2007 annual meeting in Urban, AL since I currently serve as the chair of the group. A number of other issues were discussed at the meeting and via list-serve during the year. Three fact sheets were developed and posted on the website of SERA-6. The group also developed a video tape to high light the importance and techniques of soil sampling for homeowners and wildlife food plots. All those activities greatly enhanced the soil and other agricultural 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 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. Dr. Lalman presented two summaries of work being conducted at OSU dealing with timing of weaning in fall-calving cows and supplementation of weaned calves grazing stockpiled bermuda grass forage during the fall. Both of these presentations were summarized and published in the annual proceedings produced by the group.

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

**Contact:** David Lalman

**CSREES Goal 3: Multi-State Activities**

**Name of Planned Program/Activity:** CECP: Cooperative Extension Curriculum Project

**Progress Report:** The southern region Cooperative Extension Service has developed a multi-state distance in-service training and education system entitled Cooperative Extension Curriculum Project (CECP). As the Oklahoma OCES Nutrition Education Specialists I am co-chair of the southern region CES CECP Food, Nutrition and Food Safety Team. In 2006 I developed the evaluation instrument, entered and analyzed the evaluation data of the first CES CECP Food, Nutrition and Food Safety distance in-service module on the “Dietary Guidelines” and helped in the development of a multi-state presentation on the “Dietary Guidelines” distance in-service module at the Society for Nutrition Education. In addition I participated in multi-state teleconferences and planning on a new distance in-service module on “Lifecycle Nutrition.” In 2007 the southern region CES CECP Food, Nutrition and Food Safety Team will continue to work on development of the “Lifecycle Nutrition” distance in-service module.

**Contact:** Janice Hermann

## CSREES Goal 4: Multi-State Activities

**Name of Planned Program/Activity:** Cereal Aphid Pest Management Initiative

**Progress Report**: The Areawide Cereal Aphid Pest Management Initiative is in its final year and includes state partners from Colorado, Nebraska, Kansas, Oklahoma, Texas and Wyoming. Dr. Sean Keenan, the Rural Sociologist has completed collecting data from the focus group studies conducted with 147 cooperating producers from all cooperating states. He just finished a second round of focus group interviews with cooperators in all cooperating states and published a book chapter and the 2005 Report. A CD version of the Cereal Aphid Expert System has been completed. We are developing a CD video that summarizes all of the activities that have been completed, and should be finished by July 2007. In addition, the team is developing a Wheat Production Guide which will be finished and available by December 2007. Diane Varner, a communications specialist continues to produce a quarterly newsletter called "Plain View" that is sent to all producer cooperators. Field plots have been established at all locations, and the fifth year's data has been collected under the supervision of Dr. Kristopher Giles. Additional information can be obtained by going to the Areawide web site at http://www.ars.usda.gov/Business/docs.htm?docid=6555. All previous annual reports are available on that site.

**Contact:** Tom A. Royer

**Name of Planned Activity:** Midwest Survey of Hessian fly.

**Progress Report:** This project has been initiated in 2006 and includes researchers and extension specialists from Kansas, Texas and Oklahoma. We are currently surveying Hessian fly populations across the cooperating states. In November of 2006, the Wheat Improvement Team screened some elite winter wheat lines from Dr. Brett Carver's breeding program for susceptibility to the endemic Hessian fly populations. We have also submitted a proposal on October 2007 for funding through the Pest Management Alternatives Program (PMAP) for continued funding and enhanced surveys of the states.

**Contact:** Tom A. Royer

**Name of Planned Program/Activity:** National Advanced Fire and Resource Institute – USDA Forest Service, Tucson, 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:** 38 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 4 demonstration sites in western Oklahoma devoted to this effort. I am using our long-term research project in western Oklahoma to facilitate the application of patch burning in shinnery oak communities on approximately 60,000 acres (5 ranches) in the Texas panhandle and NW Oklahoma. Two field days in 2 states were conducted in 2006. A new habitat evaluation and management guide will be developed in 2007.

**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. I conducted 1 field day on one demonstration site in north-central Oklahoma. One comprehensive publication was developed and published in cooperation with the Kansas Department of Wildlife and Parks. One field day will be conducted in 2005.

**Other States Involved:** Kansas

**Contact:** Terry Bidwell

**Name of Planned Program/Activity:** National 4-H Wildlife Habitat Evaluation Program (WHEP)

**Progress Report:** I have reviewed and provided edits on the newest version of the 4-H WHEP manual. Also, I have coordinated with the national WHEP team on 2007 and 2008 national contests.

**Contact:** Dwayne Elmore

**Name of Planned Program/Activity:** Oklahoma IR-4 Program

**Progress Report:** Oklahoma minor crop do not have many crop protection options in their tool box. Oklahoma IR-4 works with the National IR-4 program in finding and getting new crop protection chemicals for minor use crops.

Oklahoma works with IR-4 Programs in Texas and Arkansas to secure new needs for minor use crops. Oklahoma works closely with these states since their minor use crop needs are very similar to Oklahoma. Oklahoma IR-4 attends growers meetings and meets with specialists on what to submit for Oklahoma IR-4 needs.

Oklahoma IR-4 is keeping abreast of the impact of soybean rust on minor legume crops such as snap beans and southern peas. Oklahoma IR-4 submitted Pesticide Clearance Requests to IR-4 headquarters for Oklahoma crops. One of the crops is winter canola in which Kansas is also working to obtain pesticide registrations. Multi state cooperation occurs again with Texas, Arkansas, and other states in the Southern Region such as Tennessee for Processing greens and Georgia for Pecans.

**Other states involved:** multi-state southern region (Oklahoma, Texas, Arkansas, Kansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, North Carolina, South Carolina, Florida, Kentucky, and Virginia.)

**Contact:** Charles Luper Extension Associate
Jim Criswell State Pesticide Coordinator

**Name of Planned Program/Activity:** Oklahoma Pest Management Network

**Progress Report:** Providing pest management information for Oklahoma to USDA and EPA for pesticide registrations, and other pest issues. Also the Oklahoma Pest Management Networks provides a way for Oklahoma growers to provide input USDA and EPA on pesticide issues. Oklahoma Pest Management Network is part of the Southern Region Integrated Pest Management Center. OPMN attends Southern Region IPM Center meetings to provide Oklahoma information and stay in touch with pest issues that might affect Oklahoma growers. OPMN meets with many different stakeholder groups to determine their needs and help convey those needs to USDA and EPA. A web site has been put up to provide growers and university personal with information on EPA regulatory issues such as pesticide registrations. Also OPMN provides the Southern Region IPM Centers with crop profiles and pest management strategic plans which are used by USDA and EPA for pesticide registrations concerning issues in Oklahoma.

Oklahoma provided to the Southern Region IPM Center information on aldicarb (Temik) use in Oklahoma to support re-registration of this pesticide on cotton, peanuts, soybeans and other crops. Oklahoma also provided the Southern Region IPM Center information regarding copper fungicide use in Oklahoma to support re-registration on Oklahoma crops. Information regarding soybean rust is relayed through USDA and is communicated through this program. Peanut and cattle crop profiles were completed and were submitted in 2006. A web site for growers and University personal to keep track of regulatory issues affecting pest management has been developed and can be found at http:// pested.okstate.edu.

**Other states involved:** multi-state southern region (Oklahoma, Texas, Arkansas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, North Carolina, South Carolina, Florida, Kentucky, and Virginia.)

**Contact:** Charles Luper Extension Associate
Jim Criswell State Pesticide Coordinator

**Name of Planned Program/Activity:** Pesticide Safety Education Program

**Progress Report:** OSU PSEP works with the Missouri IPM and Pesticide Certification program in assisting them with their fumigation certification and recertification. OSU PSEP also works with Kansas State University in their certification program for pest control operators and grain elevator managers. OSU PSEP worked with the University of Nebraska on their Pest Control School. OSU PSEP cooperates with the states of Arkansas, Kansas, Louisiana, Missouri, South Dakota, Texas and Wisconsin in pesticide certification and various IPM programs ranging from school IPM to grain management.

OSU PSEP is part of a multi-state program (AR, LA, OK, NM & TX) developing educational material for mosquito misters.

OSU PSEP conducts the required practicals for General Pest, Structural and Fumigation certification. Applicators from Arkansas, Kansas, Louisiana, Oklahoma, and Texas have attended one or more of these practicals.

OSU PSEP is a member of the Association of Structural Pest Control Regulatory Officials Fumigation Committee. This involves the development of inspector training material for state regulatory inspectors.

**Other states involved:** Arkansas, Kansas, Louisiana, Missouri, Nebraska, Oklahoma, South Dakota, Texas

**Contact:** Jim T. Criswell

**Name of Planned Program/Activity:** National CSREES Water Quality Program

**Progress Report:** Michael Smolen, Mitch Fram, LaDonna McCowan, Maifan Silitonga, Jamie Mundy, Alan Vandeventer, Hailin Zhang, and Josh Payne participated in the National Water Quality Conference in San Antonio, TX (Feb 2006). This delegation contributed two posters and two oral presentations addressing agricultural nonpoint source programs, youth environmental education, and drinking water education for under-served communities. Smolen also assisted in continuing activities of the 1890-1862 land grant collaborative process started in 2004.

**Accomplishments**: The Oklahoma delegation shared project results with others around the country and brought back new ideas and approaches for implementation of water quality/water resources programs in the state.

**Other States involved:** National

**Contact:** Michael D. Smolen

**Name of Planned Program/Activity:** Southern Region Water Resources Program

**Progress Report.** Michael Smolen and LaDonna McCowan attended Southern Region Planning Committee meetings in San Antonio, Orlando, and Biloxi. These meetings were used to plan regional program activities for Program Area Committees and to begin the planning of the 2007 Water Quality Conference.

**Accomplishments**: Smolen and McCowan presented a proposal to the regional coordinating committee for two regional activities to be conducted during 2006 and 2007, development of a database of Rural-Urban Interface educational materials for access through the regional project website and a Water Forum for Oklahoma, Arkansas, Texas, and New Mexico to be held in Oklahoma City in 2007.

**Contact:** Michael D. Smolen

**Name of Planned Program/Activity:** Grand Lake Watershed Alliance

**Progress Report:** Michael Smolen, hosted an informal group of educators from Kansas, Missouri, and Arkansas to discuss the educational needs for protection of Grand Lake in Oklahoma and its tributaries, the Neosho River in Kansas, the Spring River in Missouri, and the Elk River in Arkansas. This group had been meeting annually for the past three years. This year's annual meeting was held in Vinita, Oklahoma and was hosted by the Grand Lake Dam Authority in September at its headquarters building. The September meeting was attended by about 35 people including researchers from OSU and KSU, Extension specialists and staff from all four universities, and staff from environmental agencies from Oklahoma, Kansas, and Missouri. In this meeting a 4-state watershed alliance was formulated. The meeting was followed by a second meeting in December in Pittsburg, Kansas, where a steering committee and the beginnings of a framework for operation was started. The group now meets quarterly in one of the four states.

**Accomplishments**: The 4-State Watershed Alliance (4 ALL) has been formed, with a mission of addressing protection of water quality throughout the Grand Lake watershed.

**Other States involved:** KS, MO

**Contact:** Michael D. Smolen

**CSREES Goal 5: Multi-State Activities**

**Name of Planned Program/Activity:** Engaging Youth Serving Communities Grant Project

**Progress Report:** Oklahoma State University was selected as one of the states to conduct this program that focuses on Youth and Adult Partnerships. The team of state, district and field staff is working with other selected states to carry out programs to strengthen local communites.

**Contact:** Kevin Hackett and Karla Knoepfli

**Name of Planned Program/Activity:** Kansas City Global Conference

**Progress Report:** A four day conference for 4-H youth ages 15-19. The focus of the conference is cultural awareness and career preparation. There are about 350 youth who attend from the following states: Missouri, Kansas, Iowa, Arkansas, Nebraska and Oklahoma.

**Contact:** Tracy Branch, Events and Activities Coordinator

**Name of Planned Program of Activity:** SR Cooperative Extension Curriculum Project (CECP) web-based Campus.

**Progress Report:** Two staff from Oklahoma serve on design teams for development and posting of courses for the SR Cooperative Extension Curriculum Project (CECP) web-based Campus. The team works with input from other SR states that determined the scope and sequence of the core curriculum that would be posted.

**Contact:** Jeff Howard (TX) Charles Cox, Jeff Sallee, (OK) and Darlene Baker (AR), Karla Knoepfli, (OK), Samantha Ephgrave (OK)

**Name of Planned Program of Activity:** SR Biennial 4-H Conference

**Progress Report:** Oklahoma hosted the meeting which was originally planned in Mississippi. Following the hurricanes of 2005 the meeting was moved to Tulsa during 2006.

**Contact:** Charles Cox, Tracy Branch, (OK) and Darlene Baker (AR), Susan Holder, (MS)

**Name of Planned Program/Activity:** Youth Favorite Places Interactive Website

**Progress Report:** The Youth Favorite Places website is a program designed to enhance the geospatial skills of youth. Youth identify their favorite place and documents its attributes. They

then enter their data into an online data base. The information will appear on an interactive website and online map located at: http://youthfavoriteplaces.org/. This is an extension only program

**Other States Involved**: USDA – Tom Tate, Minnesota – Trudy Dunham, Tennessee – John Toman

**Contact:** Jeff Sallee

**Multi-State Activity/Program Title:** NC-1030 - Family Businesses in Economically Vulnerable Communities/Family Firms and Policies

**Focus of the Multi-State Activity/Program:** On-going study of family businesses, their role in communities, and their development and growth issues and needs. A socio-economic vulnerability index has been developed that categorizes each county in the United States. For more information see 2005 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

**Multi-State Activity/Program Title:** Great Plains Inter-Institutional Distance Education Alliance

**Focus of the Multi-State Activity/Program:** The Great Plains Interactive Distance Education Alliance (GPIDEA) is a consortium of Human Sciences Colleges at ten universities delivering a M.S. degree in Family Financial Planning.

**States Involved:** CO, IA, KS, MI, MT, NB, ND, OK, SD, TX, MO

**Contact:** Glenn Muske

**Multi-State Activity/Program Title:** e-Extension Entrepreneurship Team

**Focus of the Multi-State Activity/Program:** Formed in 2005 to respond to develop an e-Extension web site. Current efforts are being made to revise the proposal to respond to questions about our timetable and specific deliverables that will be done.

**States Involved:** NH, VT, NY, DE, WI, MN, IL, NB, TX, KT, LA, NV, ID, UT, OK

**Contact:** Glenn Muske

**Multi-State Activity/Program Title:** National E-Commerce Advisory Comm.

**Focus of the Multi-State Activity/Program:** Assists in developing outlines for national granting program and then determining grants awarded.

**States Involved:** Directly UT, NM, MS, WV, MN, OK, PN, GA, NB plus grants may go to any state

**Contact:** Glenn Muske

**Multi-State Activity/Program Title:** Cashing in on Business Opportunities curriculum revision and transferring it to a CNEP educational module

**Focus of the Multi-State Activity/Program:** Update curriculum and develop on-line in-service training modules to train educators

**States Involved:** Directly UT, MS, OK, GA,

**Contact:** Glenn Muske

**Name of Planned Program:** Economic Tools for Health Planning

**Progress Report:** One objective of this project is to train other state professionals (Office of Rural Health, Extension, State Hospital Association, Area Health Educators, etc) to be able to conduct the health impact model, community engagement process, and health budgets. This is accomplished by workshops, presentations at meetings, conference displays, etc. In 2006, I conducted four regional workshops, made presentations at seven national or regional meetings and participated in four national conferences. In addition, I have been active in SERA-19 (Southern Region Extension and Research Activity project). I have had extensive hands-on projects in Illinois, Louisiana, and Mississippi.

**Contact:** Gerald A. Doeksen, Regents Professor and Extension Economist

**Name of Planned Program/Activity:** National E-Commerce Pilot Project

**Progress Report:** This program utilizes funds from USDA provided to the Southern Rural Development Center. A national advisory committee has been formed and includes Extension professionals from OK, MS, PA, MN, UT, NB, GA, MI, WV, and NM. A competitive grants program has been offered to enhance existing or needed educational programs related to e-commerce to be offered by the Land Grant System. The committee reviewed 13 grant applications and funded five. The funded grants included the states TX, MN, PA, OH, and IA. Project PIs have produced educational materials for use in Extension nationwide. In addition, two additional projects were funded in the past year and involve PIs from SC and MS. A conference is scheduled for 2007 where the materials will be shared with extension educators nationwide. The intent is to provide educational materials for use in the Extension system in individual states.

**Contact:** Mike D. Woods