

FY 2001 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 farm and agri-business and financial management, improving domestic marketing concepts and alternatives, pest management, sustainable agriculture, commercial horticulture and alternative agriculture opportunities, natural resource management, value-added food and agriculture products, 4-H youth agriculture programs, and food safety related to production. This goal constitutes a very significant proportion of the OCES effort. Approximately 6,395 demonstrations, meetings and conferences (not including 4-H Youth) were conducted during the year. OCES personnel in agriculture-related programs conducted an additional, 40,600 visits and consultations. These activities were attended by 273,875 participants during the year (an additional 128,300 participants attended the youth activities). In addition, 12.1% of these participants were identified as representing non-white, minority populations as compared to 6.6% of the state's farms operated by individuals representing these populations.

Beef cattle production and management continues as one of the most significant major program areas. Cattle production comprises about 45% of the \$3.5 billion in cash receipts earned by Oklahoma producers. These programs included quality marketing, reproduction, cow-calf production, quality practices, marketing tools, beef production during drought, stocker production, feeding decisions, cattle pricing, nutrition, etc. Several of these programs are highlighted in impact statements in the "themes" section. Highlights include: the new Oklahoma Quality Beef Network (OQBN) program designed to take advantage of items learned from the 1995 and 2000 Beef Quality Audits – 7,500 head of cattle were certified with an average net return per head of \$20; nitrate testing in forage to reduce poisoning and loss of production; the weekly "Cow-Calf Corner" on Oklahoma Educational TV network - this educational show reaches at least 85,000 viewers; bull/genetics testing; the research and extension wheat-stocker team; "Cowculator" microcomputer program helps many producers improve net returns by letting them quickly incorporate the most economical feeds into their rations; workshops for Integrated Resource Management and forage production were important tools resulting in improved product quality and financial returns to beef producers.

The use of under-priced feed commodities through Cowculator applications and educational meetings resulted in an \$8 million cost reduction to the \$1.6 billion cattle industry in Oklahoma. Over 4,000 Oklahoma beef producers are beginning to report the positive impacts of improved practices as shown by recent Beef Quality Audit research - with data to be available next year on the overall impact. Cotton production education and Cotton IPM education played an integral role in the increase in production in the five north central counties - resulting in an increase from

900 bales in 1996 to over 12,000 bales in 2000 and establishing and testing practices and varieties saving cotton producers statewide about \$1.2 million per year, while reducing pesticide applications. Efforts in value-added food and agricultural products have been high priority in the period. Example impact statements show food processing engineering efforts show increased employment of twenty-five persons, numerous new product lines, and business expansion. Just as important, the statement indicates studies helped businesses not make unprofitable changes. Oklahoma Cooperative Extension employees of the Food and Agricultural Product Center and the county extension educator played a vital role in the development of "Value Added Products, Inc." - a \$19 million closed cooperative venture owned by 857 producers in north central Oklahoma. It began production of frozen dough products in October 2000. Presently over 70 people are employed at the plant and employees are still being hired. Conservative predictions indicate sales should exceed \$15 million in 2001. This success has led to several additional studies resulting in proposed start-up efforts in Oklahoma, including an artisan bread plant, a cow kill facility, and a packaged greens operation. Watermelon production and IPM programs have resulted in growth of this alternative crop industry in the state. An automated fungicide scheduling helps save watermelon \$20 per acre per year. Application of new precision nitrogen fertilizer application technologies should result 15-17% nitrogen use efficiency wheat. This can reduce costs and improve returns an average of \$10/ acre over the state's five million 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 \$10.7 million with \$1.3 million from Smith Lever funds. About 123 professional and paraprofessional FTEs contributed to the goal last year.

Impact Statement Goal 1

Key Theme: Adding Value to New and Old Agricultural Products

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

Issue:

Oklahoma wheat producers annually watch more than 80% of their crop leave the state as wheat. Producers statewide have long considered means of generating more income from their wheat before it leaves Oklahoma. Several value-added product possibilities have been considered by various groups of producers: flour milling, vital wheat gluten, tortillas, pasta, and bakery operations. However, market and industry analyses performed by OCES economists indicated that these ventures carried considerable risks due to weak markets, high industry entry costs, and/or stifling industry competition.

What has been done:

In response to requests made by a group of Woods County producers, the Food & Agricultural Products Center (FAPC) and Woods County Extension office used regional wheat quality data to identify a potential processing venture with a growing market and little regional competition – pre-proofed frozen dough. The market for pre-proofed (i.e. already yeast risen but not baked) frozen dough products represented a virtually untapped industry segment for wheat-based

products, mainly due to the fact that the processing technology is relatively new to the domestic baked goods sector. Primary market growth has occurred in self-rising pizza crusts, although market potential looked exceptionally good for baguettes, pastries, and croissants.

Impacts:

FAPC and Woods County extension personnel helped the group of Woods County producers plan and develop what is now Value Added Products (VAP) Cooperative in Alva, Oklahoma. The \$19 million facility, structured as a New Generation Cooperative (NGC) and owned by 857 agricultural producers, makes primarily self-rising pizza crusts for customers nationwide. The NGC also manufactures pre-proofed baguettes, puff pastries, croissants, and even cinnamon rolls for its customers. Over 70 jobs have been created thus far in Woods County, and a future expansion is being considered by the VAP board of directors.

This project has considerable recognition as a result of its success. Extension specialists involved in this project have received awards from the Oklahoma Wheat Commission, OCES, Oklahoma State University, and USDA. The successful start-up of VAP has led to several proposed NGC start-up efforts in Oklahoma, including an artisan bread plant, a cow kill facility, a packaged greens operation, and even a producer-owned processing venture for making use of poultry litter.

This project has been used nationwide as an example of Extension specialists' roles in strategic planning, value-added agricultural development, and NGC planning.

Funding Source(s): State

Scope of Impact: State Specific; Integrated Research and Extension

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Title: Facility Design and Layout for Food and Agricultural Product Processors

Issue:

New and existing food and agricultural product processors need assistance with the design, layout and expansion of their facilities. By intelligently planning and executing growth, processors can save money and reduce waste. This translates to savings both now and in the future. The engineering design and planning program follows a model developed by Dr. Tim Bowser, Food Process Engineer, FAPC and Biosystems and Ag Engineering. Planning sessions are followed by the creation of engineering documents such as Process Flow Diagrams (PFDs),

General Arrangements (GAs), Piping and Instrumentation Diagrams (P&IDs) and Equipment lists. The challenge is to design and specify a process/facility that has low initial and ongoing capital costs, is simple and safe to operate, and expandable.

What has been done:

Visits were made with the following businesses to assist them with their plant/process expansion needs. All visits included a team of professionals that could focus on the diverse issues of plant startup and expansion, including business and marketing, regulatory and sanitation issues.

7-11 Convenience Stores (Oklahoma City)

Brawdy Mushroom Farm (Oklahoma City)

Bryan Ag Products (Durant)

CJ Nutracon, Inc. (Guymon)

Fields Pies (Paul's Valley)

Johnston's Seed Company (Enid)

KAJLB Frozen Foods (Shawnee)

No Mans Land Beef Jerky (Boise City)

Ol' Santa Fe Tamale Company (Tulsa)

Rib Crib (Tulsa)

Scotts Pet Products (Tishomingo)

Stratford's Little Jelly Factory (Stratford)

Udder Farms (Langston)

Impact:

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

7-11 Convenience Stores (Oklahoma City). New doughnut bakery designed to supply fresh doughnuts to their 100+ convenience stores. Employ approximately 8 new persons.

Brawdy Mushroom Farm (Oklahoma City). Construction of new shitake mushroom growing facility. Construction in progress. Will employ approximately 4 new persons.

Bryan Ag Products (Durant). Plans for feed mill expansion in process. Will double current production with reserves for future growth. Additional labor will not be required. A possibility exists for local, contract growing of new crops to supply the feed center.

CJ Nutracon, Inc. (Guymon). Increasing capacity of plant.

CJ Nutracon, Inc. (Guymon). Plans for product and process expansion are in progress. Two new employees will be added.

Fields Pies (Paul's Valley). New process equipment will be installed which increases product capabilities and attracts additional clients. New client will expand production by about 30% and allow for year around operation of plant.

No Man's Land Beef Jerky (Boise City). Increase production capacity by over 200%

Ol' Santa Fe Tamale Company (Tulsa). Plans to construct new facility to produce tamales for retail and wholesale distribution. Will employ 3 or more new persons.

Rib Crib (Tulsa). Process and product development for new BBQ sauce production facility. Potentially employ 3 new persons.

Scotts Pet Products (Tishomingo). Improving production throughput.

Stratford's Little Jelly Factory (Stratford). New production process and facility layout/modification for existing business.

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

Source of Funds: State

Scope of Impact: State specific

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Area Applications Engineers, a team of engineers headed up by Dr. Bill Barfield and Mr. Sam Harp (Biosystems and Ag Engineering).
Faculty and staff at the Food and Ag Products Center at Oklahoma State University
Area Applications Specialists from the Oklahoma Alliance for Manufacturing Excellence, Inc.
Local Agricultural Extension Representatives from Oklahoma State University

Title: Beef Quality Summit

Issue:

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

What Has Been Done:

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

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

Impact:

Since October 1999, the OSU Animal Science meats group has presented 14 Summits held at Animal Science Arena and the Food and Ag Products Center. The program has been well received by over 400 participants who have attended the Summit. Many of participants have verbally shared positive comments about what they have learned from the Summit and have implemented many of the recommended practices in their beef operations. Many of the producers are requesting more information about genetics and beef quality/yield grade material

to sell their cattle on a carcass merit basis as a result of attending the Summit. In addition, the Summit has attracted participants from other states, international representatives from Canada, Taiwan, Russia and Singapore. The Summit has provided opportunity to incorporate information from the OK Steer Feedout and Beef Quality Assurance, which has increased the visibility of OSU Animal Science Research and Extension programs. There has been enough positive feedback that the Oklahoma Beef Industry Council has provided funds for another seven Beef Quality Summits in their 2002-2003 budget.

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

Scope of Impact: Multi-State

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Title: Three –Layer Particleboard Manufacture from Eastern Redcedar

Issue:

Eastern redcedar (*Juniperus virginiana L.*) is one of the most widely distributed indigenous conifers in Oklahoma. Since Eastern redcedar reduces forage production on grassland it is considered as pest by many landowners. Most of Eastern redcedar is not efficient for lumber manufacturing due to its irregular growth and low quality. The challenge is to determine if three-layer particleboard panels can be manufactured from furnish of whole-tree chipped of Eastern redcedar and to find a way to use this natural resource in the form of a value-added panel product.

What has been done:

Three-layer experimental boards were manufactured from the whole-tree chipped particle of low quality of Eastern redcedar under laboratory conditions. Bending strength, internal bond strength, screw holding resistance, and physical properties such as thickness swelling and surface roughness of the specimens were evaluated. It was found that both physical and mechanical properties of the samples are comparable to those of commercial panels made from other species. However, mechanical properties of three-layer panels were 15 % lower than those of single-layer panels made from the same type of raw material during the first phase of the study. To our knowledge there has been no other study investigating the feasibility of manufacturing three-layer particleboard from whole-tree furnish of Eastern redcedar.

Impact:

The importance of this work lies in its potential to expand the use of low quality Eastern redcedar in composite panel manufacture. There is an interest in this product from one

manufacturer for possible licensing. The patent, which was applied for the first phase of the study, is still pending. One journal article and an Extension Fact Sheet from the first phase of study are in press. Results of the three-layer panel testing were submitted in the form of journal article to *Holzforschung* for publication. Also various presentations about the study were delivered at different meetings including annual conference of Oklahoma Redcedar Association in October 2001.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific; Integrated Research and Extension

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Key Theme – Agricultural Competitiveness

Title: Using the Oklahoma Mesonet for Decision Support in Agriculture and Natural Resources

Issue:

Many decisions in agriculture and natural resources can be enhanced by incorporating appropriate weather-based information. Current and past weather conditions, forecasts, and value-added products can be used as decision aids in such operations as planting and harvesting, insect and disease management, irrigation scheduling, pesticide application, freeze protection, prescribed burning, and management of livestock. Use of such weather-based management tools can result not only in economic savings (increased profitability) but also in other benefits, such as reduced chemical inputs to the environment and optimal use of air and water resources. To be most beneficial, such products should feature localized weather data, easy accessibility, and be updated as quickly and often as befits the nature of the particular product.

What Has Been Done:

Oklahoma has a unique resource for localized, timely weather information that can be used for decision support in agriculture and natural resources: the Oklahoma Mesonet. Operated jointly by the University of Oklahoma (OU) and Oklahoma State University (OSU), the Oklahoma Mesonet is an automated weather station network of over 110 stations, separated by an average distance of 19 miles, and reporting weather and soil information every 15 minutes. The data is received at OU in Norman and made available over the Internet minutes thereafter.

Since 1996 a variety of value-added products for agriculture and natural resources have been developed and implemented on the Oklahoma Mesonet. Certain insect and disease models have

been developed, in conjunction with OSU entomology and plant pathology specialists, to assist the grower in making pesticide application decisions. Insect models include those for alfalfa weevil and pecan nut casebearer. Disease models include those for peanut leafspot, pecan scab, and watermelon anthracnose. In addition, an evapotranspiration model for use in irrigation scheduling has been developed as has a model to assess and predict atmospheric dispersion conditions for pollutants. Finally, an internationally recognized fire danger model has been operational since 1996, developed in conjunction with the US Forest Service. In addition to these "models", there are products depicting weather and soil information every 15 minutes, as well as value-added 60-hour forecasts. These products have been implemented with the programming assistance of Mesonet personnel in Norman and are easily accessible on the Web **Error! Hyperlink reference not valid.**

Impact:

Having a number of management tools readily available on the Web, growers and others can utilize the latest Mesonet weather information in assisting them in making wise management decisions. In the case of the insect and disease models, a certain number of pesticide applications may be saved during the growing season that, under a calendar-based system, might ordinarily be applied. These models also help in proper timing of those sprays that are needed. The Oklahoma Fire Danger Model is used extensively by state wildfire specialists, emergency management personnel, and others in assessing fire danger conditions across the state; the state Forestry Division also uses it as a tool in declaring Red Flag Fire Alert days and in recommending burn bans. The model is also used by those planning and conducting prescribed burns. Other models and data products are used for the assessment of evapotranspiration conditions for irrigation scheduling, dispersion conditions for pesticide application and smoke and animal odor dispersal, atmospheric inversion conditions (useful for freeze protection schemes), and conditions suitable for planting and harvesting.

Funding Sources: State; Smith-Lever

Scope of Impact: State-specific.

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Title: Packer-Feeder Simulation

Issue:

Understanding fed cattle market dynamics, behavior of buyers and sellers, and price discovery

What Has Been Done:

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

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

An extension fact sheet is available to explain the market simulator and its role in teaching, extension, and research. Numerous research publications are available from use of the simulator in laboratory research.

Impacts:

The simulator has been the basis for an OSU course each year, about 30 students per year for 10 years. It has been the basis for marketing workshops with nearly 90 groups. Producers from across Oklahoma and several neighboring states who have attended packer-feeder workshops market an estimated two million fed cattle annually. Agribusiness managers from such companies as Excel, one of the three largest meatpackers, and Continental Grain Cattle Feeding, one of the three largest cattle feeding firms, have hosted packer-feeder workshops for employee and management training. Workshops have been conducted for cattle producers and educators in several states (Oklahoma, Texas, Kansas, Michigan, Tennessee, Florida, Colorado, Utah, Iowa, and Kentucky). Workshops were conducted for six National Cattlemen’s Beef Association conventions. Agricultural economists in other states have adopted the software for use in classroom teaching and extension education programs (Texas A&M University, Texas Christian University, Kansas State University, Iowa State University, South Dakota State University, University of Kentucky, and Colorado State University).

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

Scope of Impact: Multi-state Integrated Research and Extension – OK, TX, KS, IA, KY, CO, SD

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Key Theme: Agricultural Profitability

Title: Oklahoma Quality Beef Network

Issue:

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

What Has Been Done:

The obvious answer to the problem is to manage cattle so they do not get sick to begin with. However, the real question becomes whose job is it, who benefits from it and who is going to pay for it. In order to facilitate the adoption of best management practices that should result in reduced sickness and associated adverse effects, the Oklahoma Quality Beef Network was developed. The objective is to add value to Oklahoma's calf crop and capture at least part of the added value through source and process verification as well as specific marketing efforts. County educators and area livestock specialists collaborated to assist in getting the program off the ground by serving as "OQBN Representatives". In this capacity, they provide education to the producers and inspect the cattle prior to marketing to insure that the integrity of the program is upheld during the start-up phase. Extension personnel also collaborated to collect extensive data on over 10,000 head of cattle sold during the "OQBN" sales as well as "normal" sales. With assistance from the Agricultural Economics department, these data were then used to determine the financial impact of the program.

Impact(s):

Five regional OQBN calf sales were scheduled for the fall of 2001. During the first year of the program, approximately 7,500 head of cattle were certified, representing 125 cattle operations. According to this analysis, cattle buyers were willing to pay an average of \$5.50 more per cwt for certified OQBN cattle. On the average, it is estimated that this premium along with cost effective weight gain during the required preconditioning period has lead to an average increase in net return of \$15 to \$25 per head. Based on the first year's successful efforts, the participating livestock markets have announced multiple sales for 2002, representing approximately 20,000 cattle. A private treaty-marketing phase is being developed. Several large purebred producers will facilitate and encourage their bull customer's to certify calves through the OQBN program so that they can be cooperatively marketed or cooperatively managed through a grazing and (or) finishing phase.

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

Scope of Impact: State Specific

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Title: Wheat Pasture Stocker Cattle Educational Programming**Issue:**

Over 1,000,000 stocker cattle, both imported and native, graze wheat pasture in Oklahoma in a typical year. Wheat forage is utilized on part of the over five million acres of small grain pasture in Oklahoma. The stocker cattle industry is the largest livestock enterprise in Western Oklahoma and adds millions of dollars in gross income to the economy. Buy-sell margin, stocker health, plus forage production, management and supplementation are key factors that affect the profitability of stocker cattle producers. In an effort to reduce the incidence of the shipping fever disease, stocker producers are purchasing calves that have been weaned from the cow and have received a series of preventive vaccinations. Some cattlemen utilize the services of a commercial cattle receiving lot or starter yard to handle newly received imported stocker calves. These yards tend to manage large numbers of high-risk, stressed calves and therefore require specialized educational programming. Stocker cattle operators often have opportunities to purchase cattle at lower prices prior to the grazing season. Educational opportunities exist to assist these producers in developing balanced, low-cost growing rations.

What has been done:

Two stocker cattle conferences attended by over 350 stocker producers are held annually to update producers on key management information. Three major topics are the center of the conference program. 1) Stocker health during the 45 day receiving period. Emphasis is placed on vaccine research, proper antibiotic use, and following beef quality assurance guidelines. 2) Market analysis for both buying stockers and selling feeder cattle. 3) A research update from the OSU Wheat Pasture Research Station.

Over 400 cattlemen attended 16 county educational meetings related to wheat pasture grazing. Topics covered included: 1) Supplementation to stretch wheat pasture. 2) Feeding the OSU small package supplement program. 3) Prevention of wheat pasture bloat. 4) Proper mineral supplementation. 5) Removing cattle from grazing at first hollow stem for maximum grain production. 6) Stocking rate research data. 7) Instruction and distribution of OSU computer programs to budget stocker purchases and evaluate feed rations. These topics were also covered in numerous farm visits, phone consultations, newspaper columns and county newsletter articles. Over 25 meetings were held to outline the Oklahoma Quality Beef Network program. Producers were instructed on the weaning vaccination and nutrition requirements needed to certify for the program. Potential stocker and feedlot buyers were included in the educational process to attain an increased value for program cattle. A statewide conference for Commercial Receiving Lots or Starter Yards was organized with more than 100 owners or managers attending. Stocker cattle receiving management, primarily health and nutrition, are the major topics emphasized. Managers of large stocker operations and veterinarians also attend this conference. A directory of Oklahoma Starter Yards was compiled and 250 copies distributed to all OSU county extension offices and interested parties as an industry service.

Impact:

Producers gained key economic skills in determining the proper amount and type of feed supplements to provide to stockers on wheat pasture. Knowledge was gained for utilizing available feed grains or byproduct feeds as low cost alternatives for wheat pasture supplementation and for efficient growing programs prior to grazing. Producer attitudes were improved regarding their commitment to follow beef quality assurance guidelines. Training was conducted for computer budgeting of stocker purchases. Four preconditioned calf sales marketing over 4500 calves were held in Western Oklahoma. Price data showed a \$4.50 to \$6.50 /cwt premium for preconditioned cattle. Premiums for preconditioned stocker calves are becoming more established and defined.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific; Integrated

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Title: Providing Vital Entomological and Production Updates to Enhance Cotton Insect Control Decision

Issue:

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

What has been done:

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

Impact:

This educational network continues to provide key entomological information strengthening the foundation for cotton IPM across the state. Cotton Sentry subscription list has steadily increased since its conception in 1990. In 2001, 86% of the subscribers (243) received the Cotton Sentry electronically compared to 14% of the subscribers (38) preferring the mail edition. Reducing insecticide usage is extremely difficult with an active boll weevil eradication program underway. However, with the introduction Bollgard technology in 1996 insecticide applications have dropped accordingly. Conventional cotton managed the same as Bollgard cotton received 3.7 more insecticide applications per season (1996 – 1999). Field research indicates the value of investing in Bollgard technology since 1996 was \$34.84/acre (weighted average) or \$9,317,772 dollars (Bollgard acreage = 266,580 acres for 6 years).

Funding Source(s): State; Smith-Lever

Scope of Impact: Multistate (KS, TX)

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Title: Beef Quality Assurance**Issue:**

Over the last 20 years the beef industry has been coping with less demand for their beef product. In order to find out about the beef being produced, a National Beef Quality Audit (NBQA) was conducted in 1991, 1995, and 2000. The Audit showed that beef was too fat, too inconsistent and too tough to remain competitive. The Audit recommended that producers evaluate their herd health and genetic management programs, eliminate non-conforming cattle from their cow herds, analyze their management practices and encourage the flow of information from the packing plant back to the ranch. Everyone involved in fed cattle could make improved decisions and produce better beef.

What Has Been Done:

With the help of Oklahoma Beef Industry Council a beef producer education program, Beef Quality Assurance, was developed by OSU extension specialists from Animal Science and College of Veterinary Medicine. Other sponsors of the Beef Quality Assurance (BQA) program have been Oklahoma Cattlemen's, Oklahoma Cattle Women, Oklahoma Farm Bureau, Oklahoma Farmers Union, Oklahoma Livestock Marketing Association, Oklahoma Veterinary Medicine Association, Oklahoma Department of Agriculture & OSU Division of Agriculture and Cooperative Extension Service. The program has been presented 70 times since its initial beginning in February 1999.

The BQA program is presented as a three-part program using beef quality research and information from the 1995 National Beef Quality Audit of beef packing plants. The topics the BQA program relates to are: cow herd management, proper health management and targeted breeding for customer satisfaction.

Impact:

The BQA program has been well received by over 4000 beef producers who have attended the 70 plus presentations across the state of Oklahoma. Several of the written comments from the meeting surveys have indicated the program to be extremely educational and very informative. Producers have mentioned it has been helpful to understand why to move the injection site from the rump to the neck, following drug and vaccine labels more carefully, evaluating animals for potential carcass yield and quality grades, and following good recommendations on cow herd culling.

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

Scope of Impact: State Specific

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Key Theme: Animal Health

Title: Nitrate Testing in the Northwest and Southwest District

Issue:

Corn, forage sorghum species, grain sorghum stalks, Johnson grass, wheat and some weed species that are consumed by cattle routinely accumulate nitrates when under environmental stress. The high plains region is a land of extremes and at some point during the course of the growing season conditions conducive to high nitrate accumulations occur yearly. These stress conditions range from cold, wet, cloudy weather to hail, drought, and extreme heat. Any conditions that disrupt plant metabolism predispose the plant to nitrate accumulation. Nitrate levels in excess of 8-10,000 ppm are deadly to cattle under many conditions. The qualitative diphenylamine test is used in the field to estimate the potential for toxicity. In the event toxicity is suspected, samples are sent to a diagnostic lab for quantitative analysis to determine actual nitrate levels.

What has been done:

County Extension Educators have diphenylamine available to use at the office or take to the field and qualitatively test forage for clientele. If a qualitative test indicates a potential problem, the sample is recommended as a quantitative analysis candidate. In the event samples have been found to be toxic, feeding regimes are recommended utilizing blending and incorporation into diets with a high starch content to dilute the toxic nitrates levels to levels that may be safely fed to cattle. A word of caution is given as well as the appropriate fact sheets.

Impact:

County Extension Educators in the Northwest and Southwest districts conducted between 600 and approximately 1,000 tests per county during this past year that saw the extremes in environmental conditions. This began with spring hailstorms and culminated with the extremely high temperatures and drought of late summer. Rainfall totals were the lowest in the last 50 years. Corn circles receiving hail had the canopies broken and pigweeds proliferated. Nitrate levels as high as 38,000 ppm were observed. This feedstuff was blended into the ensilage pit with non-toxic material. Ensiling also decreases toxicity. The corn plant routinely shuts down metabolism at about 95 degrees F. Since nitrates are higher in the stalk nearer to the ground, harvest was targeted more toward the cooler part of the day and cutter height was raised when chopping during the heat of the day. Custom cattle feedlots continue to be ever alert to the quality of the feedstuffs that are incorporated into the diets. When as many as 300,000 head of cattle at any one time that may be affected, diligence pays.

“Hay grazer” forages are routinely harvested for winter supplements. The dry conditions, which ensued in mid summer, also precipitated the harvest of corn into “big round bales”. The extreme heat stress this past summer had producers testing more samples than in more normal years. Many more milo stalk fields were also sampled as a source of winter forage. Through educational efforts over the past 25 years has made cattlemen aware of the potential for

problems. Countless head of stock have been spared nitrate toxicity by the vigilance of the stockman.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Key Theme: Animal Production Efficiency

Title: Beef Cattle Nutrition and Management

Issue:

Providing balanced nutrition to cattle through forages, feed grains, oilseeds and other feed sources has a tremendous effect on reproduction, beef product quality and profitability in all phases of Oklahoma's cattle industry, the fourth largest in the United States in terms of total cattle numbers. The challenge is to help beef producers understand how to increase profitability and/or reduce cost of production through improved forage utilization, defining optimal supplementation practices and taking advantage of under priced feed resources.

What Has Been Done:

An ongoing extension and research program has been developed to provide cow/calf and stocker cattle producers with the information and tools needed to evaluate nutrition programs and reduce costs. One component of the program is a nutritional management decision-making tool in the form of a computer software package: *OSU Cowculator*. Secondly, a complete educational package, "A Methodical Approach to Beef Cow Nutrition", was developed, presented and distributed to extension educators and area livestock specialists. The packet includes the software, a slide set with suggested text, and several related fact sheets. This packet can be used as a stand-alone educational program, or it can be used in support of the *Cowculator* software. Next, a web site was developed to support and distribute the software, user instructions and beef cattle nutrition and management educational materials. A second web site is maintained for the purpose of educating producers relative to the use and availability of uncommon and often under priced feeds. Applied research is ongoing to investigate ways to take advantage of these under priced feeds in cow/calf and stocker cattle enterprises. A second educational packet, complete with slides, suggested text, and fact sheets was developed and distributed to extension field staff for the purpose of assisting producers in the use of byproduct feeds, particularly during periods of drought.

Impact(s):

OSU Cowculator is extremely user friendly and has enjoyed wide adoption across the beef cattle industry in Oklahoma and the United States. Approximately 2,500 copies of the *Cowculator* software are distributed each year. At least twelve other Universities use *Cowculator* in their nutrition and beef production courses and (or) as the primary cow/calf nutrition evaluation software in their respective Cooperative Extension systems. *Cowculator* is also being used in several foreign countries. Use of under-priced feed commodities has increased dramatically in Oklahoma in the past four years. Part of this dramatic increase has been caused by changes in market conditions and extreme drought in some parts of the state. Extension faculty, Area Specialists and Extension Educators have worked closely with five different feed industry companies (located in Guthrie, Perry, Fletcher, Webbers Falls and Coweta) in developing a byproduct feed storage and redistribution system. In every case, the companies have started with a few truckloads of these commodities and gradually expanded. In one case, the company has expanded to the point of maintaining two warehouses and hiring four field representatives around the state. Research and educational programs have been invaluable in facilitating this growth. Estimated total impact is more than \$8 million.

Funding Source(s): State; Smith-Lever

Scope of Impact: Multi-state

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Title: Oklahoma Central Bull Test

Issue:

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

What Has Been Done:

The central bull test program was developed in 1973 to provide beef cattle breeders a source of valuable information on postweaning growth performance. Each year producers enter their cattle on a 112-day postweaning gain performance test. Cattle originate from Oklahoma, Missouri, Kansas, Arkansas, and Texas. A performance test committee establishes the rules for the test and the rules comply with the Beef Improvement Federation performance guidelines. Data are collected every 28 days and a report is sent to all participants and interested groups. The report

includes information on average daily gain, weight per day of age, adjusted 365 day weight, scrotal circumference, hip height, pedigrees, expected progeny differences, and ultrasound scan data. Additionally, a website is maintained to provide cattle producers with the latest reports and current information on performance. For cattle producers with small herds, the bull test station coordinates a fall and spring sale to assist cattle producers in marketing their animals.

Impact(s):

For the year 2001, 75 breed specific reports were mailed to cattle producers participating in the program, commercial cattle producers interested in purchasing cattle, and other parties interested in the program. There were 560 bulls on test for the year 2001. For the fall and spring sales, the program assisted producers in marketing 265 bulls to both commercial and purebred cattle producers in the Oklahoma and surrounding state regions. For both sales, 90 cattle producers sold bulls, 155 cattle producers purchased bulls, and the gross revenue was \$484,000. For the years 1973 to 2001, 17,480 bulls have been tested through the bull test program.

Funding Source(s): State; Other

Scope of Impact: Multi-state

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Title: Oklahoma State's Cow-Calf Corner

Issue:

Even producers who have been in the cow-calf business for years know there's always another bit of information they need. But they can't always be tied to the TV or at meetings when the information is offered.

What Has Been Done:

Glenn Selk, OSU Extension animal production specialist, began giving some of that information in 1993 on Tuesday Cow-Calf Corner segments on SUNUP, Oklahoma Cooperative Extension's weekday TV broadcast on educational channels. But as computer technology has expanded, Cow-Calf Corner has grown, too. Producers who can't or don't choose to watch the show at 7 a.m. with the program's 85,000 - 100,000 viewers can turn on the computer any time of day or night, do a net search for "Cow-Calf Corner", and see the current segment in quick-time video with sound.

But that's not all. The web site also offers upcoming topics, other resources to look for more information, as well as archives for 160 different cow calf management topics already discussed.

Links throughout direct users to more resources such as fact sheets, county Extension offices, and Selk and his colleagues at Oklahoma State and sometimes other states as well.

Cow-Calf Corner web site is at: <http://cowcalfcorner.okstate.edu>

Impacts:

A producer from Asher, OK, wrote: "SUNUP is the quickest way to get agricultural bulletins or information spread over the whole state. My favorite part is Cow-Calf Corner since my major product is beef calves. Cow-Calf Corner always gives timely information that needs attention at the time of season that it is now--not too early or too late. I would like for more time to be available sometimes to explain some problems and solutions in more detail."

Selk explains that "In television, time limitations can be extremely tight. Occasionally, we would like to go into a subject in more detail. Now, with our web site, we can do just that for viewers who want more." "It's like peeling the layers of an onion," he says. "Depending on the amount of information you want, you can just go deeper and deeper into OSU's web resources." Many producers tell Selk they like the consumer convenience-- information at will. They appreciate pertinent information immediately when weather or other conditions change their lives and livelihoods.

For example, a Duncan, OK, producer emailed Selk, "Thanks for the info. The 'Corner' is a great site and is now bookmarked. Concerning the Limit Feeding, we have been doing this since the article appeared in the 'Cowman'. It's too early to tell about effects of conditioning, but it sure helps stretch our hay supply. Obviously, this is important in most years, but this year it's downright critical."

The Cow Calf Corner website is averaging 883 hits and 166 user sessions per day. The user sessions averaged 11 minutes and 28 seconds in length.

Says Ted Evicks, Pittsburg County, OK, County Extension Educator: "Glenn, I sure enjoy the timely researched info you give each Tuesday on SUNUP. Keep up the good work."

Funding Source(s): Smith-Lever; State

Scope of Impact: State Specific; Integrated Research and Extension

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Key Theme: Diversified/Alternative Agriculture

Title: Watermelon Foliar Disease Management Education

Issue:

Foliar diseases can cause severe damage to watermelon crops. In 2000, for example, downy mildew caused defoliation of many fields in the eastern part of the state and, for some growers, complete crop loss. These losses can be greatly reduced if suitable controls are employed. Foliar disease management is best accomplished by the proper use of preventive fungicides. This approach requires the use of either a schedule approach or disease forecasting aids to protect the crop from disease while keeping fungicide use to a minimum.

Although use of the tactics needed to obtain this control is discussed to some extent in yearly extension education programs, many growers continue to be taken by surprise when their crop begins showing symptoms of foliar disease. It may be that the concept of treating for a problem before it becomes visible has been difficult to grasp. It is often only after disease is present that many growers take action and apply fungicides. Consequently, Oklahoma growers often suffer substantial crop losses to foliar diseases in spite of the fact that fungicides are used.

What Has Been Done:

A short course on the management of foliar diseases of watermelon was conducted during 2001. It was conducted in areas of the state where foliar diseases are most likely to be a problem and where foliar disease control measure adoption has tended to be sporadic. The course consisted of indoor meetings and field demonstrations. Indoor meetings were designed to instruct growers on the recognition of the various foliar diseases and their biology and control. Three demonstrations were established in farmers' plantings to provide an opportunity for the observation of the effect of using suggested control measures. Also demonstrated were some of the options growers have regarding the decision making associated with foliar disease management.

Impact(s):

During the indoor meeting portion of this educational program a quiz was taken by participants at the beginning and the end of the meetings. Of 20 quizzes taken both before and after the meeting, there were a total of 62 wrong answers on the 'before' quizzes and 34 wrong answers on the 'after' quizzes. This suggests that grower understanding of plant diseases and their management was increased by the sessions.

The demonstration of foliar disease management was successful in heightening awareness that growers can control these diseases. During 2001, disease incidence was moderate and successful demonstration of control measures was achieved at two of three demonstration sites. Consequently, growers had the opportunity to see the benefits of using disease management.

Some new adoption of foliar disease management by growers was observed during this short course. Because the demonstrations located on the farms included untreated controls growers had an opportunity to see the benefits of the practices they implemented on their farms. This implementation, if sustained, will reduce risk of disease losses in future crops.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific (although some of Oklahoma's watermelon producers also grow watermelon in other states)

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Title: Fungicidal Control of Watermelon Anthracnose

Issue:

In Oklahoma, the production of vegetable crops represents a potentially important alternative agricultural enterprise. Watermelon is the most economically important vegetable crop now produced in the state. The profitability of watermelon production could be increased by further refinement of crop management practices including the control of pests such as pathogens, weeds, and insect. Watermelon anthracnose is one of the most important diseases of watermelon in the state. Under warm, wet conditions the disease can increase explosively and result in the loss of the entire crop. Cultivars with resistance to anthracnose are not available commercially. Consequently, the disease is controlled by the application of fungicides, up to five or six times during a cropping season. However, fungicides are used most efficiently when they are applied only under conditions that favor development of disease.

What Has Been Done:

A preliminary, computerized, weather-based system for detecting conditions that favor development of anthracnose has been developed and posted on the world wide web. Weather data are provided by the Oklahoma Mesonet. The Mesonet is a mesoscale network of weather stations (each comprising automated, electronic weather sensors) with at least one station in each county. On the web site, a farmer can view a predicted likelihood of an outbreak of anthracnose for a crop planted on a specific date and at a specific location. Information about the system has been provided verbally and in writing at numerous meetings of watermelon producers.

Impact(s):

The cost of applying a fungicide to a watermelon crop is approximately 20 \$/acre.

Approximately 24,000 acres of watermelon are planted in Oklahoma each year. Assuming that the equivalent of one application of fungicide is withheld on only one quarter of the 24,000 acres of watermelon are planted in Oklahoma each year, the automated fungicide scheduling system can provide watermelon producers with an annual saving totaling \$120,000.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Key Theme: Home Lawn and Gardening**Title: The Oklahoma Master Gardener Volunteer Program****Issue:**

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

What Has Been Done:

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

Trainees participate in a 10 - 13 week course receiving between 40 - 56 hours of course work on subjects including: basic plant science, vegetables, fruits, nuts, ornamentals, lawns, diagnosing pest problems, soils, and other related topics. Instructors for the training sessions are State, District, and County Extension personnel and specialists. Upon completion of the training period, satisfactorily passing an exam on materials and topics covered, and donating between 40 - 56 hours of volunteer time to the Horticulture program, the trainees are certified and awarded the title of Oklahoma Master Gardener.

Examples of Master 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. Through the innovative program, Extension has reached out to more people and groups. At the same time, the program has significantly affected professional staff's use of time. Survey responses from twelve of the participating counties show a range of 10 - 25% of the agents time is spent coordinating the program. However, the experience of the established county programs indicates that the program eventually frees the agent's time for other program opportunities. The Oklahoma Master Gardener program has begun to demonstrate clearly that volunteers can serve as excellent educators at the local level in consumer horticulture.

The Oklahoma Master Gardener Program continues to grow across the state with as many as 22 counties participating in the program as of 2002. Approximately 284 new Master Gardeners were trained during the 1999-2000 training season. Close to 1249 active Master Gardeners volunteered their time, contributing approximately 33,580 hours of volunteer service and reaching over 79,000 Oklahomans with as many as 600+ educational and community programs and activities being conducted in their communities. This translates to over a half million dollars in service that was donated by volunteers (wage rate of \$15.39/hour was used, which includes a 12% estimate of fringe benefits. This hourly rate is the assigned wage for nonagricultural workers in 2000 as published in the *Economic Report of the President* (2001 edition). The Independent Sector, an organization that "serves as a national forum to encourage giving, volunteering and not-for-profit initiative," supplied this information).

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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Title: *Oklahoma Gardening Television Program*

Issue:

Providing the public of Oklahoma with a source of relevant, practical and reliable home gardening information. The challenges of gardening in Oklahoma's unique climates demand knowledgeable assistance. Oklahoma Gardening is the source of horticultural information transforming it's viewers into a population of garden-smart individuals.

What Has Been Done:

Oklahoma Gardening has been providing top quality programming for 27 consecutive years, receiving several broadcasting awards along the way. It continues to be one of the top-ranked Oklahoma produced programs on OETA with a weekly viewer ship of around 175,000. Each year, 40 new shows are recorded with the top 12 rebroadcast during the winter months.

Impact:

Letters, e-mails, and comments from trade show attendees and studio garden visitors, indicate the positive effect of the program on Oklahoma's gardening public. Enhanced quality of life is achieved through successful gardening experiences, including; nutritional home food production and preparation, creation of relaxing and aesthetically pleasing outdoor environments, cultivation of air-cleaning indoor plants, and conserved resources and environment through the use of appropriate materials and practices.

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

Scope of Impact: State specific, with some overlap into; AR., KS., TX., and MO; Extension

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Key Theme: Invasive Species

Title: IPM Helps Oklahoma Landowners Fight Invasive Thistles

Issue:

Musk thistle (*Carduus nutans* L) was introduced into the eastern seaboard area of the US sometime 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. Infestations of musk thistle in improved pastures cause significant economic losses in Oklahoma. In 1998, Oklahoma legislators passed a law designating musk thistle, along with scotch and Canada, as noxious weeds in all counties of the state. Based on "1995 Pasture Survey", average acreage of improve pasture for each producer in Oklahoma 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. Presently only about 10-15% of the state's pastures are significantly infested.

What Has Been Done:

An Oklahoma IPM musk thistle control program was developed in the early nineties and has been implemented statewide through cooperative efforts of researchers, extension personnel, and landowners. This integrated program focuses on: 1) increasing public awareness of the problem, 2) development of educational information, 3) demonstrating various control options, and 4) introducing new biological control agents. Numerous demonstration and educational meetings have been conducted. Extension Educators and landowners collected 56,000 musk thistle head weevils in three northeastern counties in the Spring of 2001, and released them on 110 new sites. In all 334,000 musk thistle head weevils were released by this program. In 2000, 13,600 rosette weevils were collected and released on 22 new sites in Oklahoma – these will be harvested and spread to additional sites in 2002. Detailed establishment and impact of the Thistle head weevil and Rosette weevil in Oklahoma were documented in a Masters thesis published in 2001. Two demonstrations were established in 2000-2001 and six meetings held in western Oklahoma. About 120 landowners attended tours of the demonstrations in spring of 2000. They saw results of chemical and biological control; plus signed up for release of weevils on their land. Two fact sheets were distributed in 2001- “Integrated Control of Musk Thistle” and “Thistle Identification”.

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. However, some 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. For many of the producers participating, Extension Educators have collected weevils and provided them at no cost. Cost of controlling musk thistles for 10 years using an integrated approach with weevils would be \$1,800 or less. This represents an average savings of at least \$3,400 per producer over the first 10 years while at the same time significantly reducing the amount of herbicides broadcast on the land. 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

Contacts

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Key Theme: Managing Change in Agriculture**Title: Develop Efficient Peanut Production Systems for New Peanut Areas of Oklahoma****Issue:**

The Oklahoma and US peanut industries continue to undergo changes. Rising production costs, disease problems etc. have continued to result in a shift of peanuts from eastern Oklahoma to southwest Oklahoma. Five southwestern counties (Harmon, Tillman, Jackson, Beckham, and Greer) now account for 25% of Oklahoma's 85,000 acre peanut crop. Peanuts remain one of the few farm commodities offering acceptable potential for a positive return to growers. Profit margins are very narrow as costs of production have risen and prices paid to producers have remained as established by the 1996 Farm Bill. Growers must adopt innovative management strategies to remain competitive in the peanut industry. Growers in southwest Oklahoma need assistance with production practices such as variety selection, tillage, weed control, fertilization, and crop rotations.

What Has Been Done:

An educational and field demonstration program has been established to assist growers with management strategies and to ensure they are competitive in the peanut industry. This effort focuses on the introduction and demonstration of new and appropriate technology for southwest Oklahoma conditions. Extension meetings, workshops, and turnrow meetings have been conducted to take the needed information to the grower. Publications have been developed that provide detailed information on recommended strategies and practices.

Impact(s):

As a result of this work, new peanut growers have increased their knowledge of appropriate production practices. This has resulted in greater yields and reduced input costs. Evaluations of the effort indicate that yields have increased by 5%, resulting in an increase of 150 lbs/ac. The total value of the improved management is more than \$1,000,000 per year to producers in five southwest Oklahoma counties.

Funding Source(s): State; Smith-Lever**Scope of Impact:** State Specific**Contact:**

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Key Theme: Plant Production Efficiency

Title: Integrated Pest Management of Greenbugs In Wheat

Issue:

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

What Has Been Done:

A publication, E-831 "Wheat Management in Oklahoma: A Handbook of Oklahoma's Wheat Industry" which contained a multi-media CD Rom was developed in 2001. This publication included updated information on aphid management in wheat. A sampling tool, called "Glance N' Go" is being developed to provide wheat producers/crop consultants with an accurate, easy-to-use, sampling program for greenbugs. This sampling tool is based upon research that was conducted in over 100 wheat fields in Oklahoma over two years. The sampling program uses a strategy called binomial sequential sampling, which allows producers to accurately assess greenbug numbers by examining and counting infested tillers instead of counting aphids. Sampling can be discontinued anytime the thresholds for treating or not treating are exceeded. Binomial sequential sampling often saves time yet provides accurate information on insect populations. Preliminary evaluations of this sampling tool suggest that it can reduce sampling time in wheat by 30% while providing accurate estimates of aphid density.

Impact:

Over 3000 copies of E-831 were distributed in 2001. Glance N' Go will be made available in spring of 2002 as a stand alone publication and through a computer-based Greenbug Decision Support Expert System, which, when completed, will be placed upon the Wheat IPM Homepage <http://entopl.okstate.edu/IPM/wheat/index.html>. The sampling tool will be distributed to extension educators and in-service education will be provided to demonstrate its accuracy and ease of use. Following that introduction, it will be made available to growers and crop consultants. An assessment of wheat growers is being conducted that is designed to measure diffusion and adoption of this plan over the next 5 years. A initial survey of producers that was conducted this past fall established that less than 1% of respondents had ever heard of Glance N' Go. A second survey, to be conducted in 2-3 years, and a third survey that will be conducted in 4-5 years will measure changes in awareness, adoption and impact of this sampling plan as it is made available through extension educational programs.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Title: Wheat Yield Limiting Nutrients in Major County

Issue:

Wheat grain yields over the past three years have been above average for Major County. While this success is greeted favorably, the fertility practices producers follow have not kept pace with the production levels. At a point in the near future, wheat fields will lose their productivity and below average yield will be commonplace. The Major County Extension Service in cooperation with local fertilizer dealers took a proactive stance to look at the fertility levels of producer's fields.

What Has Been Done:

Three hundred and one (301) soil samples were taken by producers and processed to determine the soil fertility levels. Educational program was held to assist producers with their soil samples and get general trends of soil fertility levels across the county. This was also an excellent chance to provide wheat fertility education and a chance to look at soil fertility research impacting their wheat crop.

Impact:

There were several issues that were brought out by the soil sampling done in Major County. Twenty-four (24) percent of the 301 samples were identified to have a soil pH level that would reduce yields due to aluminum toxicity. This pH range also would reduce the amount of wheat pasture if producers were involved in a dual-purpose wheat production system. For those producers with the low pH soils, banding of phosphorus, liming or selection of aluminum tolerant wheat varieties were discussed and recommended.

Producers would like to have a residual soil nitrate nitrogen reading of at least 20 pounds per acre. That would give producers a good level for the initiation of plant growth. When looking at the residual nitrate nitrogen levels in the Major County samples, 67% of the samples were below the 20 pounds per acre level of nitrate nitrogen. These readings would tell producers that they are not keeping up with their nitrogen fertilizer programs. Again it is not a question of fertilizing the soil, it is a matter of over production for the last three years. Through forage removal and grain removal, producers are lowering their carry over nitrogen levels. This could over the long haul reduce the amount of forage production and grain yields. During our educational programs we use the 502 fertility study at the North Central Research Station at Lahoma to show the 30 year trends in yields and the most efficient application rates which would be 40 bushels of grain

would be produced at 80 pounds of nitrogen per acre rates. Two pounds of nitrogen would equal 1 bushel of wheat grain.

The OSU phosphorus index of 65 would mean that we should reach 100% of our yield goal because phosphorus is not a limiting nutrient. Once a producer's index level drops below 65, he would need to apply phosphorus on an annual basis. In Major County 88% of 301 samples were below 65 on the Phosphorus Index Scale. This indicates our phosphorus fertilizer programs have not kept up to the amount of phosphorus being removed from the soil.

Potassium levels for Major County were high. Only 12% of the samples tested were below the 250 Index Scale reading were OCES recommends potassium. The samples that were below the 250 reading were fields previously cropped to alfalfa. We know alfalfa is a huge user of potassium so we can understand why these soils were deficient.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Title: How to Make Fertilization Pay

Issue:

Providing a better understanding of soil fertility to farmers and ranchers so that they will be better informed when making decisions on fertilizer needs for both cash crop and forage production. The goal is to help producers realize the importance of soil testing to determine the fertility needs of the specific crop to be grown which in return will help increase profitability and/or reduce cost of production through proper fertilization, which will increase soil fertility and maximize resource potential. In addition, proper fertilization will have a positive impact on the environment in helping producers make informed decisions on the timing of fertilization and proper amounts which will help decrease the amount of potential nutrient run off into ponds, watersheds, streams, lakes and area rivers.

What Has Been Done:

A soil fertility meeting was held in which all producers were provided the opportunity to submit a soil sample in advance and receive the results of the test at the fertility meeting. Across the county 65 producers representing both fall/summer crops along with improved/native grasses submitted samples. The results were utilized to compile a database for the meeting indicating the overall wide variance in fertility for the different crops/forages being produced. The producers were provided the soil test at no cost, (a \$10 value), and received a free copy of the Oklahoma Soil Fertility Handbook 2000. Area fertilizer dealers helped to advertise the meeting and sponsoring the evening meal. Additional information on soil fertility and specific crops needs is placed in the local newspaper and in the agriculture newsletter on a regular basis along with individual visits as needed.

Impact(s):

The educational meeting was well attended by 83 producers, and the meeting survey indicated that 68% do not regularly do soil test. The office has developed a working relationship with numerous producers that had not typically used the services of the office. As a result, a conservational tillage educational meeting was provided, and a soil fertility test plot for a native grass hay meadow has been established in cooperation with a local producer with other test plots being planned at this time. Including the free soil test provided at the meeting, soil testing has increased by more than 100% for 2001. Several extension offices in the Northeast district have conducted soil fertility meetings and the district as a whole has seen a 15% increase in the number of soil samples submitted. In conclusion, by making producers aware of the need for soil testing and proper fertilization to maximize potential production, it is expected that they will in return become better stewards of the land.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Title: Use of Cotton Harvest Aids in Oklahoma Cotton Production Systems

Issue:

Oklahoma is on the Northern fringe of the cotton production belt, and producers normally are required to fully exploit heat units available for crop production. Preparing the crop for harvest is a season long process. It begins with variety selection, stand establishment and early vigor, adequate, but not excessive nitrogen fertilization, development of a good plant structure prior to bloom, and high retention of fruit, Many management decisions made throughout the year will

influence effectiveness of a harvest aid program. Due to these management inputs, no single “set of rules” can be used for determination of timing and materials used in an effective harvest aid program. There is a need for an educational program to educate producers on cotton plant growth and the defoliation process, and a demonstration program emphasizing treatment materials and combinations of materials for effective and economical conditioning of the cotton plant for harvest.

What Has Been Done:

An ongoing extension program has been in place for the last several years with the purpose of education of producers on cotton management decisions that will influence season length, cotton fruiting, and time of harvest. The producer’s goal should be to have physiologically mature plants at the time of harvest. Seven meetings were conducted during the growing season to assist producers in proper management of the growing cotton crop. At the proper time nine replicated research and large plot demonstrations covering approximately 300 acres were initiated in Southwest Oklahoma. Signs were posted for all demonstrations, and field tours were held for two of the locations.

Impact(s):

An increased awareness of the function and use of harvest aids was evidenced by the higher quality of the crop. Leaf and color grades are an indication of the proper use of harvest aid materials. In the 2001 season, 67.5 percent of the cotton graded in the top three color grades, and 80.3 percent of the cotton graded in leaf grades 1-3. This is the highest quality crop we have harvested in Oklahoma. In addition, I was asked to be a Southwest Region co-editor for a Harvest Aids Monograph Series, sponsored by the Cotton Foundation, and I also wrote a chapter on timing of harvest aids. I was also asked to deliver a presentation on timing of harvest aid applications at a symposium at the Beltwide Cotton Conferences in 2001. The Harvest Aids Monograph has now been published and was distributed at the 2002 Beltwide Cotton Conferences.

Funding Source(s): State; Smith-Lever

Scope of Impact: State and multi-state throughout the cotton producing regions of the U.S.; Integrated Research and Extension

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Title: Integrated Management of Sclerotinia Blight of Peanut

Issue:

Sclerotinia blight has been the most destructive disease of peanuts since the mid 1980's. Growers suffered yield losses of 50% or more in years when cool, wet conditions prevailed before harvest because effective control strategies were not available. In the early 1990's, the resistant variety Tamspan 90 was released and widely planted. Acceptable yields of 3,000 to 3,500 lb/A were produced in infested fields. However, problems with web blotch disease and marketing spanish peanuts reduced the acreage of this variety. Tamrun 96, a high-yielding runner variety, was released in 1996, but no resistance to Sclerotinia blight was claimed. In extension demonstrations, this variety produced acceptable to high (>4,000 lb/A) in infested fields, depending upon prevailing disease pressure. Yields for this variety were superior to Tamrun 98, a variety released for resistance to Sclerotinia blight. However, growers suffered damage and apparent yield losses from the Sclerotinia blight in 1999 when disease pressure was severe. In addition, high rates of dichloran (2 to 4 lb/A) were used to deduce disease severity. To remain competitive under the current economics of peanut production, a management strategy was needed to improve production levels in infested fields.

What has been done:

Field demonstrations were conducted each year in Oklahoma from 1996 to 2000 to evaluate the response of peanut varieties to fungicides for control of Sclerotinia blight. Data from these trials showed that use of the fungicide fluazinam increased yields of all varieties except Tamspan 90 by at least 1,000 lb/A. This demonstrated the additive effects of varietal resistance and fluazinam. Furthermore, applications made just after disease symptoms appeared, resulted in disease control equivalent to a high-input, preventive program. Fluazinam was registered for use on peanuts for the first time in 2001. The judicious use of fluazinam in conjunction with resistance varieties was promoted at field days and grower meetings, and through mass media and extension publications.

Impact:

Recent surveys indicate that about 45% of the 80,000 acres cropped to peanut is infested with Sclerotinia blight. The disease became established in late August and became severe by harvest. About 75% of the infested acreage was planted to Tamrun 96 and most received a single application of fluazinam (0.5 lb/A). Based on results of demonstration trials, the integrated management program increased yields by at least 750 lb/A and netted about \$6 million statewide. The increased production was reflected in the second highest state-wide yield that was achieved in 2001 despite less than average rainfall over most of the season.

Funding Source(s): State; Smith-Lever

Scope of Impact: State Specific

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Key Theme: Precision Agriculture

Title: Improving Farmer Profitability And Water Quality By Precision Management Of Nitrogen Fertilizer Inputs

Issue:

The largest, single, purchased input for wheat producers is nitrogen fertilizer, however, crop utilization of this resource is only about 33 %. Conventional recommended fertilization involves establishing a production yield goal and nitrogen requirement, corrected for available soil nitrogen identified by a current soil test. While this approach is based on long-term research, it fails to account for temporal and spatial variability responsible for four-fold differences in year-to-year actual nitrogen needs of wheat grown in the same field.

Improved management of nitrogen fertilization would reduce production cost (on a per unit product basis) and also reduce the amount of unused nitrogen that is a risk to the environment (hypoxia in the Gulf of Mexico). Approximately 300,000 tons of actual nitrogen is used in production agriculture annually in Oklahoma at a cost to producers of about \$120 million. The estimated 66% of nitrogen lost to the environment represents about 200,000 tons of nitrogen and \$80 million annually.

What has been done:

Interaction with research (Dr. Raun in Plant & Soil Sciences) and engineering (Drs. Solie and Stone in Biosystems and Agricultural Engineering) scientists led to the discovery that nitrogen requirements in a field were different for each nine square feet. Review of long-term wheat and corn research data revealed that the largest variable in year-to-year nitrogen needs was the amount of non-fertilizer nitrogen available to the crop. Development of a new sensor-based precision management nitrogen fertilizer applicator (OSU license with NTech Industries Inc.) will provide the new technology for in-season management of nitrogen to minimize spatial and temporal variability effects on crop yield and nitrogen utilization.

Description and implementation of this new nitrogen management strategy has been promoted through public meetings with fertilizer dealers, producers, commodity groups, government agencies and legislators. Regional and national promotion has occurred at professional meeting presentations and publications, and most recently with a display at the National Capital (March 5, 2002).

Impact:

Early field results indicate an improvement of 15% in nitrogen use efficiency and 17% in wheat grain yield. The savings in fertilizer use for Oklahoma wheat farmers is estimated to be about \$12 million annually. Long-term improvement in managing temporal variability of crop

nitrogen needs is estimated to save farmers about \$10/acre in lost revenue from better yields and fertilizer use (5 million acres of wheat x \$10/acre = \$50 million annually).

This new technology has application wherever crops are grown with nitrogen fertilizer input. The greatest impact will be for enterprises with the highest per acre inputs of nitrogen and for crops occupying the greatest land areas (cereal grains). This technology is now being considered for corn and will be evaluated for rice in the future. As the technology is implemented in the US corn belt, the improved use of applied nitrogen by the crop will reduce loss of nitrogen to drainage waters and ultimately reduce the hypoxia problem in the Gulf of Mexico.

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

Scope of Impact: National; Integrated Research and Extension

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Key Theme: Risk Management

Title: Biosecurity for Oklahoma Beef Cattle Operations

Issue:

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

What Has Been Done:

In November, December, of 2001 and January of 2002, six meetings have been scheduled and conducted wherein approximately 90 minutes of detailed instruction has been delivered to cattlemen and OSU Extension personnel. Three hundred producers have thus far been instructed about improved biosecurity of their cattle operations. At this writing two more meetings are scheduled in the spring of 2002. In addition, an OSU Fact Sheet about “Biosecurity in the Beef Cattle Operation” has been written and submitted to Agriculture Communications Services for duplication and delivery to County Extension Offices.

Impact(s):

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

Funding Source(s): 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, food preservation, HACCP Training, and microbiological testing. During the year, 175 demonstrations, meetings and conferences were conducted under this goal. Over 4,800 participants attended these activities during the year. OCES personnel conducted an additional, 1,478 visits and consultations with these audiences.

Educational and service programming under this goal really fall into commercial categories and home/general public categories. New effort was begun in 2001 to train county educators in relation to biotechnology and food safety issues. Educational programs with commercial food processing, preparation, and retail sales make up much of our effort. The Oklahoma Food and Agricultural Product Center is a completely state-funded entity that is wholly integrated into the OCES mission in Oklahoma. The Center has conducted numerous HACCP training sessions for food processors in the state. This has resulted in many of these processors ability to develop and maintain acceptable HACCP plans to help them stay in business. The center is working closely with state and federal authorities working on microorganism food security problems. The Center also conducts training sessions for food related entrepreneurs trying to get into business or expand their businesses. Food safety laws and regulations are an important part of this training. The Center also provides educational programs such as the "Master Cannery Workshop". This program provides basic training in producing acidified and acid canned foods. Several of those attending these workshops have returned to the Center for additional business and processing assistance. Food service industry personnel in Tulsa have available to them a 12-hour food handlers' course. Local food codes require taking such a course and passing of a test. The OCES course is the only one with materials and testing also available in Spanish. Food handling in the home is also an important part of the FoodSafe program and numerous nutrition-based cooking schools. The OCES conducts numerous nutritional programs. Most of these programs include food safety in selection and preparation of foods in the home. These nutrition programs are reported under CSREES goal 3. In addition, 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.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Total expenditures represented by programming and related support for this goal are approximately \$2.0 million with \$200 thousand from Smith Lever funds. About 17 professional and paraprofessional FTEs contributed to the goal last year.

Impact Statements Goal 2

Key Theme – Food Handling

Title: Oklahoma FoodSafe Program

Issue:

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

What Has Been Done:

The Oklahoma FoodSafe Program works primarily with consumers to increase the safety of the food supply in our state. By increasing their awareness and knowledge of safe food behavior and choices and by teaching them to take responsibility for the safety of their food they can reduce their risk of foodborne illness. The program has offered food safety education in a variety of projects including the Oklahoma Healthy Living and Healthy Living A-Z Programs for adults and children, leader training for Family and Community Educators, a food safety campaign for the elderly called “Food Safety for Seniors,” a public service announcement campaign called “Tasty Safety Hints,” the Oklahoma Gardening public television program, and a weekly television segment called “Food for Thought” broadcast directly into daycare centers to reach daycare providers. Other educational projects have targeted raising awareness of food safety and increasing a sense of personal responsibility for the safety of food selected and eaten. Substantial numbers of Oklahomans have been reached through such projects as:

- In-service training and teaching materials were provided to county educators in 2001 on food safety for large groups, food safety for the elderly, biotechnology and home food preservation.
- Leader training for Oklahoma Family & Community Educators in 1999 may reach 4,984 club members.
- The “Oklahoma Gardening” public television kitchen segments on safe food preservation and preparation reach 175,000 viewers for each of its 20 to 30 annual appearances.
- The “Tasty Safety Hints” public service announcement campaign reached over 800,000 Oklahomans with me
- Thirty-nine “Food for Thought” segments, part of the National Child Care Network broadcasts, were broadcast directly into 40 daycare centers increases their knowledge and awareness of food safety issues for children and families in 1998.

Impact:

Important dietary improvements observed among Oklahomans, both youth and adults, who participated in the "Healthy Living A-Z" Impact Program included statistically significant improvements in safe food handling practices such as:

- Increase in hand washing
- Increase in washing fresh fruits and vegetables

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

Youth that participated in the “Healthy Living Program” were exposed to the primary food safety message that encouraged children to always check for a brown color throughout their hamburgers before taking a bite. Of the 63 children who completed the program forty-three percent increased their score when asked if they checked to see if their hamburger was brown all the way through before eating. These programs all represent potential reductions in foodborne illness risk for Oklahomans. For each case of foodborne illness that does not occur, Oklahoma saves money in medical costs and avoids productivity losses.

Funding Sources: Smith-Lever; state

Scope of Impact: State specific

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Title: Quick & Easy Cooking Schools

Issue:

Thirty-six counties in Oklahoma (2000) were above the state average for reported food-borne illnesses. (Food-borne is laboratory confirmed cases of Campylobacter, E.coli o157:h7, and Salmonella.) The reported cases in Washita County were 159% higher than the state rate and 219% higher than the U.S. rate. Custer County’s incidents were 20% higher than the state rate and 49% higher than the U.S. rate.

What Has Been Done:

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

Impact:

The food-borne illness rate the following year after the pilot cooking school dropped dramatically for Washita County going from 159% higher than the state rate to 100% lower than state rate. In addition, Custer County food-borne illness rate dropped tremendously going from

20% higher than the state rate to 21% lower than state rate. Furthermore, data from the cooking school's pretest & post-test indicated a significant increase in the number who knew the correct internal en-point temperature for safe pork cookery. In addition, there was an increase in the number who used a meat thermometer after attending the cooking school. Moreover, the following are samples of additional food safety comments from participants regarding what they learned: "Wash meat thermometer in-between insertions. Do not just rinse the grilling tray that held raw meat but wash it before putting cooked meat back on it. Do not thaw meat on the counter." (Participants were given a pretest at the beginning of the cooking school and mailed a post-test 4-6 weeks later. Data from the thirty additional cooking schools held in 2001 is currently being compiled.)

Funding Source(s): Other; state; Smith-Lever

Scope of Impact: State Specific

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Key Themes: Food Safety

Title: Biotechnology: The Science and The Issues in Food Safety

Issue:

Virtually every day in the news, there's something about genetically engineered crops, ranging from promises of lessening world hunger to serious questions about the safety of these crops in the environment and in the food supply. At the forefront of this controversy is the Extension Educator, who must wade through the misinformation and emotional rhetoric to deliver science-based, unbiased facts to their clientele, both the consumer and the producer. However, as consumers and producers themselves, they also may be uncertain about the risks and benefits of genetically engineered food crops.

What has been done:

A committee of ten state and area Extension specialists met over the course of a year developing a program to help Extension educators address many of the issues surrounding the use of genetically engineered food crops. The target audience was county, area, and state Extension educators from both agriculture and family/consumer sciences. An all-day workshop was held July 31, 2001, in Oklahoma City. Over 75 educators attended this workshop, representing 26 counties, all 4 district offices, 4 area offices, and one participant from Langston University. A total of 13 speakers gave 20-45 minute presentations on their areas of expertise, from basic information (the how and why of genetic engineering) to more advanced philosophical issues (impact on the environment, human health, and even the ethics of using these "man-made"

plants). A Web site was developed after the workshop to provide downloadable presentations and on-going current issues (<http://agecon.okstate.edu/gmo>).

Impact:

The goal of this project was to provide Extension educators with the tools they might need to answer consumer and producer questions about the use of biotechnology in food crops. The workshop itself presented the audience with a balanced and fairly complete discussion on many of the key issues surrounding biotechnology in food safety. The planning committee worked at prioritizing the key information this audience would need, and presented both “sides” of many of the key issues surrounding the topic. For example, we invited both a representative from a company that produces genetically engineered seeds and a representative from an organization that is opposed to the use of those seeds. As a consequence, the audience gained a greater understanding of both sides of biotechnology use in food crops. One educator stated afterwards, “I may not agree with their position, but at least now I understand where they’re coming from.” Recognizing that these educators will need additional resources, we provided each participant with a large reference notebook that contained the speakers’ presentations and additional supporting material for each individual topic; lists of relevant Web sites and reports; consumer attitude surveys; and an additional purchased “communication guide” to provide further resource material. A post-workshop survey documented that this workshop was very well received. The respondents field roughly three questions per month on biotechnology, with about a fourth writing articles on the topic. Most telling was our question regarding their level of comfort with biotechnology before and after the workshop. Based on a 1-10 scoring system, the audience nereported a 57% increase in their comfort level just from our workshop alone. This project is on going, with material from the Web site and from the resource notebook in use at other workshops and in classrooms, and the planning committee hopes to conduct additional workshops in the future.

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

Scope of Impact: State specific

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CSREES Goal 3: A healthy, well-nourished population

Overview

Oklahoma key program components contributing to this goal include: nutrition, health and wellness, and community nutrition education programs. The OCES 5-year plan of work includes key program components under other goals (particularly goal 5) that CSREES chose to include as themes under this goal (goal 3), such as, health care-community health care. Thus some reporting discontinuities may exist between what is reported in the overview and under key themes. During the year, 3,550 demonstrations, meetings and conferences were conducted under this goal. OCES personnel conducted an additional, 10,570 visits and consultations. All these activities resulted in reaching more than 81,000 participants during the year. Approximately 30.6% of the participants were non-white audiences compared to 25% in the general population of Oklahoma. The primary non-white audiences were female/Black and female/Native American. Each constituted approximately 9% of those reached.

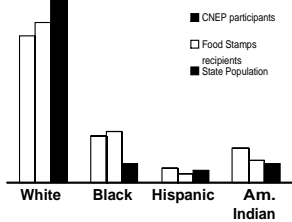
The OCES community nutrition education programs (CNEP) reach a large and diverse audience across the state. These programs include: EFNEP Families/Nutrition Education, EFNEP 4-H Youth/Nutrition Education, EFNEP Interagency Cooperation, and the ONE Program. For example, in addition to a large number of group educational meetings, professional and paraprofessionals conducted over 7,000 visits and consultations with clients concerning nutrition. These programs address the full spectrum of nutrition education and information, including: food choices, selection, preparation, healthy diets, prenatal, child and adult nutrition, nutrition related illnesses, food safety, food costs, community gleaning, community nutrition, etc. A research study conducted during 2000 found that Oklahoma realizes a 36% gain on their investment in CNEP. The gains primarily come from decreases in nutrition-related illnesses resulting in lower medical costs and an increase in worker productivity (fewer sick days). Family Consumer Scientists also have program targeting other groups like the Medicare Touch and Dining with Diabetes programs designed to assist particular high-risk groups with issues. A program area of rapidly growing emphasis for OCES has been rural health care. Medical facilities and services are vital to the quality of life of rural residents and the survivability of rural communities. OCES rural and community development professionals working with county extension educators, community leaders, community groups, and other agencies have community health planning sessions around the state. These programs are closely related to the community health services and infrastructure programs discussed under goal 5. Together they are helping many rural hospitals find a means to remain open and to contribute to the health and economy of these communities.

Positive progress was made in all Key Program Components listed under this goal in the Oklahoma Cooperative Extension Service 5-year plan of work. Several of these programs (particularly those mentioned above) have grown over the past few years. Total expenditures represented by programming and related support for this goal are approximately \$6.0 million with \$1.6 million from Smith Lever funds. About 85 professional and paraprofessional FTEs contributed to the goal last year.

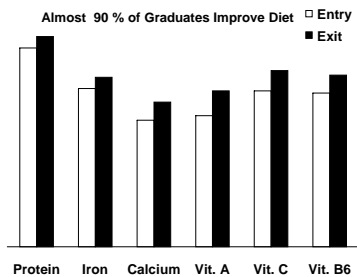
FCS IMPACT STATEMENT

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4,763 Families Participated



Almost 90 % of Graduates Improve Diet



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cothrep@okstate.edu *[Describe the Oklahoma situation or issue.]*

[Documented educational change in knowledge, attitude and/or behavior.]

•Use if necessary, if not delete bullet]

lani@okstate.edufcs.okstate.edu/parenting *Impact: Parents become aware of their need to be better parents. They became aware of new parenting strategies. Parents actually adopted four new guidance techniques praise, wording instructions as do's instead of don'ts, rules, and consequences. Parents felt they were more in control and things were calmer at home because there was less yelling. Parents liked the reading materials provided as part of the classes and thrived on the emotional support group members provided.* Email:

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[rh/PQA/exted.htm www.porkboard.org/PQA/default.asp](http://www.porkboard.org/PQA/default.asp) www.okpork.org **Key Theme: Youth**
Farm Safety Title: Livestock Safety for Kids

http://ipm.okstate.edu/ipm/stored_products/stored_products.html
