Texas Cooperative Extension

and

Texas Agricultural Experiment Station

[1]Joint Annual Report of Accomplishments and Results: FY 2005

Texas A&M University System
Agriculture Program

For Federal Reporting Year
2005

[1] Completed and signed 31 March 2006

Texas Cooperative Extension (TCE)
and
Texas Agricultural Experiment Station (TAES)

FY 2005 Joint Annual Report of Accomplishments and Results

A. PLANNED PROGRAMS

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

Overview

Texas Cooperative Extension and Texas Agricultural Experiment Station programs under Goal 1 focus on increasing the competitiveness and profitability of the agricultural industry in the state, nation, and world. Three programs representing a broad sector of the agricultural community are represented by this goal. These programs include risk management, field crops and forage production, and, livestock quality and profitability.

Risk Management. Risk is inherent at all levels of the food and fiber system. For the Texas food and fiber system to become more competitive, profitable, and sustainable (in light of changing agricultural and trade policies and highly volatile commodity and input prices), farmers, ranchers, and organizations–plus the communities that are dependent upon agriculture--must be better able to weigh the risks and projected impacts of alternative decisions on profitability and competitiveness. Managing the increased price and income risk is key to the future economic success of production agriculture and agribusiness firms in Texas. As economic stress intensifies, risk management–knowing the probabilities associated with what to do and what not to do–becomes even more important to the long term goal of a profitable and sustainable agriculture.

In response to the described need, TCE-TAES coordinated the development and delivery of multifaceted programs in risk management. Specific risk management related programs to be highlighted include the TCE-TAES jointly developed *FARM Assistance* decision support system, the *Agricultural and Food Policy Center (AFPC)* analyses of financial health for representative farms, the *Center for North American Studies (CNAS)* efforts to evaluate trade policy scenarios and their economic impacts on various sectors of the agricultural economy, and financial recordkeeping tools and management information systems targeted to improve risk management decisions for beef cattle producers through the *Standardized Performance Analysis (SPA)* program.

Field Crop and Forage Production. Environmental stresses, crop pests and global market forces make profitable and sustainable production of crops and forages a continuing challenge. It is through understanding and adoption of technologies that improve productivity, profitability and global competitiveness of crop and forage production systems that Texas farmers and ranchers will enhance their competitive position to other producers around the world. The target audience includes farmers and ranchers who produce field crops and forage in Texas. Research conducted by the Texas Agricultural Experiment Station along with outreach education programs through Texas Cooperative Extension had significant impacts on the production and economic success of growers in Texas in 2004. Through local, regional and statewide programs, Texas producers are the recipients of timely, sound and objective research-based information to enhance their production success.

Field Crop and Forage Production. Environmental stresses, crop pests and global market forces make profitable and sustainable production of crops and forages a continuing challenge. It is through understanding and adoption of technologies that improve productivity, profitability and global competitiveness of crop and forage production systems that Texas farmers and ranchers will enhance their competitive position to other producers around the world. The target audience includes farmers and ranchers who produce field crops and forage in Texas. Applied research and outreach education programs through Texas Cooperative Extension had significant impacts on the production and economic success of growers in Texas in 2005. Through local, regional and statewide programs, Texas producers are the recipients of timely, sound and objective research-based information to enhance their production success.

Livestock Quality and Profitability. Texas ranks first in the nation in total livestock value and has the broadest spectrum of producers and variation in production environments. High production costs and variable sale receipts for all livestock species necessitates adoption of best management practices to efficiently produce livestock and their resulting end-products that are cost-competitive with consumer alternatives while meeting the food quality and safety standards expected by our society. Educational programs are needed to increase producer awareness of consumer concerns and implementation of advancements in research proven production practices and developments in technologies to meet those needs while increasing net returns from livestock operations. Research and education programs focus on livestock genetics, nutrition, reproduction, cost effective best management practices and how producers can increase profitable production efficiency while still producing high quality, safe, wholesome end products. Specific livestock recommended management practices in selection, nutrition, reproductive physiology, health, and meat science are emphasized. Other factors that influence product acceptability in the market such as marketing methods and food safety issues are stressed.

Sources of TCE-TAES Funding and FTEs

TCE Funding: Smith Lever and State Matching

		$ X 1000 Actual FY 2005
Program 1 – Risk Management		1,438
	FTEs	18.50
Program 2 – Field Crops & Forage Production		2,525
	FTEs	112.40
Program 3 – Livestock Quality & Profitability		3,217
	FTEs	144.89
Total Allocated Resources Goal 1		**7,862**
	FTEs	**360.23**

TAES: Hatch, and state, federal and private contracts and grants

Source of Funding and FTEs

Federal Funds ($ x 1000):	3,786
State Funds ($ x 1000):	14,052
FTEs:	119.27
Number of Projects:	336
Number of Publications:	1,226

State TCE-TAES Plan of Work Program 1: Risk Management
Key Theme: Risk Management, Agricultural Competitiveness, and Agricultural Profitability

A. Description of Activity

Risk is inherent at all levels of the food and fiber system. For the Texas food and fiber system to become more competitive, profitable, and sustainable (in light of changing agricultural and trade policies and highly volatile commodity and input prices), farmers, ranchers, and organizations–plus the communities that are dependent upon agriculture--must be better able to weigh the risks and projected impacts of alternative decisions on profitability and competitiveness. Managing the increased price and income risk is key to the future economic success of production agriculture and agribusiness firms in Texas. As economic stress intensifies, risk management–knowing the probabilities associated with what to do and what not to do–becomes even more important to the long term goal of a profitable and sustainable agriculture.

In response to the described need, TCE-TAES coordinated the development and delivery of multifaceted programs in policy analysis, risk assessment, risk management, and in-depth management/marketing education. In the past, policy, management, and marketing changes were evaluated based on average results. But, in Texas, averages do not tell the story–the risk of upside and downside swings also must be evaluated for long-term survivability. Educational and applied research programs are focused on (1) intensive education in group settings; (2) use of master volunteers and county Extension personnel to expand extension and research communication; and (3) one-to-one assistance in financial and risk management.

As one example, along with numerous one-day events on various risk management topics, 63 producers attended a 64-hour *Master Marketer* workshop program in FY05. Attendance included producers from 5 different states. These individuals greatly enhanced their risk management knowledge and skills. Many of the Master Marketer graduates go on to become marketing club leaders in their respective counties thereby teaching others about risk management tools. A new, in-depth training program for new and emerging producers was launched in FY03—referred to as Tomorrow's Top Ag Producer Program, TTAP. Over 100 contact hours with each participant occurred through the 15-month curriculum ending in January of 2004. The second TTAP program began in November 2005, and the classroom portion of the program will run through January 2007. One-to-one producer assistance using district-based risk management specialists was facilitated through the TCE-TAES jointly developed *FARM Assistance* decision support system. Individual agricultural operations statewide, using information specific to their business, can now effectively assess the riskiness of proposed changes and the projected impact of those changes on their net worth 10 years down the road. Producers completing a FARM Assistance analysis agree to have their information entered into a confidential database for use by research economists as well as for the development of educational programs to serve additional producers, some from underserved populations or geographic regions.

The *Agricultural and Food Policy Center (AFPC).* The farm program is an integral part of the risk management decisions producers must make. AFPC conducted analyses for Congressional leadership and communicated results to state and national commodity groups relative to the economic health of representative farms under various policy scenarios. The AFPC also analyzed alternative approaches to support ethanol production.

The *Center for North American Studies (CNAS)* (a joint TAES-TCE activity) evaluates trade policy scenarios and their economic impacts on various sectors of the agricultural economy. CNAS has taken the lead with other in-state groups relative to trade with Cuba and analyzing potential economic benefits to the U.S. farm sector. The WTO decision related to cotton is another issue receiving CNAS attention in FY05.

Financial recordkeeping tools and management information systems have improved risk management decisions for beef cattle producers through the *Standardized Performance Analysis (SPA)* program. This one-to-one joint TCE-TAES program has led to computerized decision aids using coordinated Excel spreadsheets. The SPA database also is used for applied research and the development of improved education programs for beef producers. *The Tomorrow's Top Ag Producer Program* is another example of intensive education with one-to-one follow-up to increase the adoption of information technology.

The emphasis in risk management by TCE-TAES is targeted toward owners and operators of commercial size farms and ranches. Some of these commercial operations are geographically disadvantaged in that they are located in isolated areas. Marketing clubs and the delivery of education based on the FARM Assistance database are reaching underserved populations, such as along the border with Mexico. Through additional funding support from the Southern Region Risk Management Education Center (managed for the Southern Region by TCE), risk management programs have been adapted for small scale agriculture audiences through the network of 1890 institutions in the South.

TCE-TAES are collaborating with other CSREES partners, including Kansas State, Oklahoma State, Mississippi State, Montana State, University of Minnesota, Iowa State, University of Missouri, Cornell, Virginia Tech, New Mexico State, Louisiana State, and the Prairie View A&M Cooperative Extension Program. External collaborators include the Texas Farm Bureau, the Texas Corn Producers Board, the Texas Wheat Producers Board, Texas Cotton State Support Committee, the Texas and Southwest Cattle Raisers Association, the Texas Department of Agriculture, and the U.S. Rice Foundation.

B. Impact of Programs

Master Marketer Educational System (MMES): MMES consists of a number of coordinated educational efforts including: Master Marketer training, Advanced Topics Series, Master Marketer for Agricultural Lenders, Tomorrow's Top Agricultural Producers Program (for young producers), leveling workshops, and marketing club activities. These group training efforts are supported by the *Risk Management Curriculum Guide; Marketing Club Leaders Guide;* a website for education and market updates; newsletters; and market outlook & agricultural policy update teleconferences.

One result of the in-depth Master Marketer Workshops is producers highly trained on the subject of risk management. In surveys of participants conducted 2.5 years after they completed the 1996-2002 Master Marketer workshops, 616 producers estimated, on average, that their *annual* incomes had improved by $32,702 as a result of adopting effective marketing and risk management practices. If the 152 producers who have participated in the four in-depth workshops since mid-2002 received similar results, then the aggregate *annual* impact of this part of the program in Texas would approach $25 million in added combined income to these 768 producers!

The training appeared to have a major impact on the participants' risk management practices. For example, 36 percent of 768 producer-graduates from the 1996-2002 workshops said they had marketing plans prior to ending Master Marketer. Two and a half years later, 85 percent said they had developed marketing plans. Prior to the workshops, 44 percent said they used breakeven costs in marketing decisions. Two and a half years later, 80 percent indicated they incorporated breakeven price information into their enterprise marketing plans. Similar improvements were reported for other knowledge and skill variables. Producers indicated a 91 percent increase in improved confidence towards utilizing various marketing tools for risk management from participating in Master Marketer.

Master Marketer graduates agree to share what they have learned with others in their respective counties through small marketing club study groups. This volunteer aspect greatly multiplies the educational impact of the program. More than 90 marketing clubs have been started or revitalized by Master Marketer volunteers–helping to extend risk management education to producers across the state. Members of current clubs were surveyed in 2003. Of the 407 producers who responded to the survey, marketing club members indicated they increased their gross revenue by an average of $12,399 per year as a result of their participation in a marketing club.

A new publication on risk management was developed for small scale agriculture which can be used with part-time or limited resource producers. The *Risk-Assessed Business Planning for Small-Scale Producers* workbook was developed in collaboration with faculty from Prairie View A&M University Cooperative Extension Program.

Tomorrow's Top Agricultural Producer (TTAP): Tomorrow's Top Agricultural Producer Program was launched in FY03 to reach the risk vulnerable audience of new and emerging producers. With the risk and financial commitment necessary to enter farming or ranching in today's economic environment, new producers need all the financial and risk management assistance they can get. The entire curriculum covers four weeks over a 15-month period. Over 100 contact hours occurred with participants in this intensive program that focused on the necessary elements of developing a formal business plan for their operation–a way to provide the business tools that all producers need to effectively manage and market their production. Volunteer mentors were utilized in Phase II of the intensive program where each program participant was assigned three mentors. A formal evaluation of the program was conducted in FY05 after the mentor program has been completed. Survey results indicate that graduates of the program achieved a 50% increase in business management skills, an increase in net farm income of 3.1%, and a reduction in their debt/asset ratio of 5.5%. The program was so successful in terms of improved knowledge and skills that the decision was made to conduct the program again, beginning in the fall of 2005.

FARM Assistance: Financial and Risk Management (FARM) Assistance is a unique combination of Extension risk management specialists working one-to-one with producers–backed up by a sophisticated computerized decision support system planned, developed, and regularly modified by a team of TAES and TCE scientists. The FARM Assistance software allows risk assessment of differing strategic alternatives for the farm or ranch. As farming operations are becoming more diverse and complex, individual analyses of risk and financial factors, using research-based tools, are needed. More than 1,500 alternative risk management scenarios have been analyzed for individual producers since 1999–representing 1.9 million acres of crop and pasture land.

One measure of the FARM Assistance program's impact is the projected net worth consequences of each risk assessment subscriber's starting situation versus the best-case or worst-case scenario. This measure indicates the potential gain or loss in net worth a producer could potentially see, at the end of the 10-year planning horizon, from a decision to continue current practices versus another alternative under consideration. From all the producers in the database, on average, a $25,492 per year difference in net worth was calculated for this measure. Thus, risk assessment, using the TCE-TAES developed FARM Assistance decision support system can pay big dividends. In fact, seventy-three percent of the FARM Assistance subscribers responding to a survey indicated that their participation in the program allowed them to make a change that likely will have a positive financial impact on their operation. Eighteen percent said the analysis helped them avoid making a decision that likely would have had a negative risk impact. The FARM Assistance program has been recognized for use in FSA borrower training programs. When producers complete the planning requirements associated with their FARM Assistance analysis, this satisfies the borrower training requirements for FSA borrowers.

In addition to the advantages that individual producers receive for participating in this significant effort, many other producers and associated agribusiness firms are benefiting from the database that is being developed from accumulating the individual analyses. Producers want to compare the critical success factors in their operation to those of similar operations nearby. This secondary impact of the program is being used to further target educational programs and applied research efforts. Underserved audiences will be able to glean risk management ideas from database summaries. Joint TAES-TCE contributed papers have been presented on best risk management practices, success rates under alternative debt scenarios, and policy and tax impacts on types of operations.

Agricultural and Food Policy Center (AFPC): The Agricultural and Food Policy Center (AFPC) is a joint program of TAES and TCE. The decisions of producers regarding farm bill options are an integral part of risk management. Analyses of the safety net impacts of the 2002 farm bill on representative crop farms was analyzed for the House Ag Committee. AFPC developed baseline analyses and presented them to the House and Senate Ag Committees, USDA policy analysts, and commodity groups. The Center also continued to study the economics of ethanol production in Texas as a diversification alternative for grain producers.

Economic models of representative farms and individual commodity sectors have been developed and used to conduct comparative statistic analyses of policy changes. Results focus on the change in the profitability of farms and ranches in Texas and the U.S. due to changing various policies. Basic research for this project involved development and documentation of a simulation language that runs in Excel. The policy facilitated our development and application of Monte Carlo simulation models for policy analysis, and this system has been adopted by researchers in USDA-AMS, Purdue, and U. of Arkansas as well as FAPRI, Columbia, Mo.

Center for North American Studies (CNAS): The Center for North American Studies also combines basic and applied research with outreach delivery through extension outlets. Although the Center has many varied activities, its focus for the past few years has been on the analysis of (1) NAFTA, WTO, FTAA, CAFTA and other trade policy impacts on U.S., Texas, and southern agriculture; (2) Mexican livestock, meat, and feed industries and fresh fruit and vegetable trade impacts via the North American Free Trade Agreement (NAFTA) on structure of industries resulting from trade liberalization; and (3) the economic impacts of renewed agricultural exports to Cuba. Work on the impacts of variations in exchange rates showed that a

one percent increase in the value of the U.S. dollar decreased U.S. broiler exports to Japan, Hong Kong and Mexico by 0.56 percent to 0.96 percent, while the 25 percent 1994 depreciation of the Mexican peso increased their exports of melons to the United States by 4 to 36 percent.

CNAS, working with representatives of the Texas Department of Agriculture and the Texas Farm Bureau, formed the Texas-Cuba Trade Alliance (TCTA). The goal of TCTA is to educate Texas producers, agribusinesses, and trade facilitators about new regulations allowing the sale of food and other agricultural products to Cuba and resultant export opportunities and competitiveness. CNAS also conducted applied research which estimated that, under a high export growth scenario, the value of agricultural and requisite exports to Cuba could exceed $1.2 billion, creating $2.8 billion in additional economic output, $818 per household new income, $1.6 billion in new GDP, and over 32,000 new U.S. jobs.

Economics of Water Investments/Irrigation Technology: In the Texas Rio Grande Valley, Texas Agricultural Experiment Station (TAES) and Texas Cooperative Extension (TCE) economists are collaborating with irrigation managers and their consulting engineers to determine the economic and financial costs of projected water and energy savings with the RIDGECON model. These associated costs are being provided for the capital rehabilitation projects being proposed to the Bureau of Reclamation, the Border Environment Cooperation Commission, and North American Development Bank. To date, fifteen federally-authorized project components, with total estimated construction costs of $42.2 million, have been analyzed. Using amortization procedures, these projects are estimated to save a combined 49,392 acre-feet of water (16 billion gallons) each year, with individual project components' cost of saving water ranging from $16 to $119 per acre-foot.

Standardized Performance Analysis (SPA) and Beef PEP Program: Standardized Performance Analysis is a specialized applied research and extension outreach program, primarily for beef cattle producers. The Excel spreadsheet based management information system was developed and updated to analyze beef cattle financial and production performance. The Southwest Cow-Calf SPA database has 424 herds, 306,610 cows, and analytical results from this database are widely used in educational programming. Refinement of the financial statement and managerial accounting methodology continues with a coordinated effort with the Farm Financial Standards Council (FFSC) new management accounting project. This effort is helping to develop a consistent methodology in stocker/feeder cattle cost accounting for more informed, economic-based decision making by ranchers. An application of the SPA program was to evaluate the value of the adoption of technology in beef cattle through the Beef PEP program. Demonstration herds that adopted best management practices were shown to increase average net returns by $52.96 per exposed cow. Statistical analysis indicated that 61 percent of this increase could be attributed to the Beef PEP program. Conservatively, if five percent of the cattle in Texas are in herds that adopt the best management practices in Beef PEP, the impact on the economy would be $3.8 million.

Output Indicators:
No. of people completing non-formal risk management education programs–24,594

Outcome Indicators:
The total number of people completing non-formal risk management education programs who plan to adopt one or more risk management tools or strategies after completing these programs–4,140

The total number of people completing non-formal risk management education programs who actually adopt one or more risk management tools or strategies after completing these programs– 2,413

C. Sources of Federal Funds

TCE: Smith-Lever and State Matching; USDA competitive grants and user fees
TAES: Hatch, and state, federal and private contracts and grants

D. Scope of Impact

Multi-State Extension – KS, OK, MS, MT, MN, IA, VA
Multi-State Research – MO, VA, CA, GA, OK, HW, AR, LA, NM, NY
Integrated Research and Extension: In the highly competitive and complex economy associated with food and fiber production, research and extension led efforts have allowed the industry to better understand the probabilistic aspect of their decisions, and the decisions of others in our global economy on their economic well-being.

State TCE-TAES Plan of Work Program 2: Field Crops and Forage Production
Key Theme: Agricultural Competitiveness, Agricultural Profitability

A. Description of Activity

Environmental stresses, crop pests and global market forces make profitable and sustainable production of crops and forages a continuing challenge. It is through understanding and adoption of technologies that improve productivity, profitability and global competitiveness of crop and forage production systems that Texas farmers and ranchers will enhance their competitive position to other producers around the world. The target audience includes farmers and ranchers who produce field crops and forage in Texas.

B. Impact of Programs

Applied research and outreach education programs through Texas Cooperative Extension had significant impacts on the production and economic success of growers in Texas in 2005. Through local, regional and statewide programs, Texas producers are the recipients of timely, sound and objective information to enhance their production success.

Texas is the largest cotton production state, producing four to five million bales annually, although favorable weather, improved pest management strategies and better adapted cotton varieties have pushed this total over 7 million bales in 2004 and over 8 million bales 2005, with over 5.65 million bales of this record shattering crop coming from the High Plains. The strong, interdisciplinary approach to cotton production through Extension education has had a marked effect on fiber quality and quantity in the Texas crop.

A notable success has been achieved by faculty at the Lubbock Agricultural Research and Extension center through a multi-year, multi-location set of cotton systems trials which evaluate the value of new cultivars and their fiber properties as well as transgenic traits in these cotton varieties.

With the loss of most of the U.S. domestic cotton mills, High Plains producers will struggle with profitability unless substantial gains can be made both in terms of yield and quality. Identification of more profitable newer transgenic and conventional varieties is resulting in important variety shifts by High Plains producers. It is expected that continuing increases in "new variety" acreage will have a major impact on both profitability and quality/marketability of High Plains cotton over the next few years. The new transgenic varieties containing Roundup Ready Flex and Bollgard II will need to be closely scrutinized for yield and quality. According to the USDA Cotton Varieties Planted reports for 2001, 2002, 2003, 2004, and 2005, significant variety changes in the High Plains can be documented. Varieties/technologies with lower overall economic returns are quickly being replaced by improved types based. This is due to teamwork with industry (funding and willing cooperators) and the credibility we have garnered due to our large plot projects.

One example is the rapid adoption of the FiberMax 958 conventional variety, which has been identified by the Systems Variety Testing Project as a more profitable type. FiberMax 958 was NOT noted as one of the top 12 varieties planted in the 2001 USDA report, but was observed to be the number 5 planted variety in the 2002 crop with 7.7% of the total Lubbock Classing Office (territory acreage of about 2.9 million acres). In 2003, the FiberMax 958 variety was planted on 17.7% of the Lubbock Classing Office territory acreage (second place ranking

variety). In 2004, this variety was planted on about 16.8% of the Lubbock territory acreage (first place ranking variety). In 2005, the percentage of acres planted to FiberMax 958 in the Lubbock Classing Office territory was 23.4%, again the highest ranking for a variety. In 2001, the Lamesa Classing Office (territory of about 700 thousand acres) indicated that FiberMax 958 was not listed among the top 12 varieties planted. In 2002, FiberMax 958 was planted on 1.7% of the Lamesa Classing Office territory (eleventh place ranking). By 2003, it was the top ranked variety (10.5% of acres). In 2004, this variety was again the top ranking variety with about 21.5% of the acreage. During the 2005 crop year, on the heels of the record sized crop of 2004, 29.1% of the Lamesa Classing Office territory was planted to this variety, which again was the top ranked variety. The High Plains of Texas, due to good growing conditions, timely rainfall, and excellent breakthroughs in genetics identification and adoption have set record yields back to back (4.84 million in 2004 and 5.55 in 2005).

Market share for this conventional variety has exponentially increased. The rapid adoption of this variety indicates that significant gains in yield, quality, and thus income are being obtained on these planted acres in a continuous manner. Approximately 29.13% of the Lamesa Classing Office territory, that amounts to about 200 thousand acres. If we consider 23.35% of the Lubbock Classing Office territory, that amounts to about 630 thousand acres. The total for planted acres of FiberMax 958 from the two classing offices is about 830 thousand. If producers realized an average of $50/acre in increased profits (due to combined yield and quality advantage) on these acres compared to what they were planting just a few years ago, this translates to a $41.5 million increase in returns to the region with the adoption of just this one variety.

With the outstanding record production year of 2005, significant monetary gains were made by growers who planted this variety. The TASS Districts 1N and 1S production is estimated at 5.55 million bales. This record year dwarfs the previous record by about 800 thousand bales (2004 with about 4.82 million, which in itself broke the previous record by over 1 million bales). An unusually high amount of standing acres was harvested (3.46 million). The dryland crop was excellent in many areas of the High Plains in 2005. Many dryland producers were able to produce up to 2 bales/acre with the varieties planted while irrigated producers also had record yields. The greatest negative concerning cotton quality was the micronaire. In 2005, the High Plains generated the lowest micronaire (average 3.7 in 2005 and 3.6 in a much cooler 2004) cotton since 1992 (average 3.4).

Based on classing office results for the 2005 crop, the following can be determined. The above normal precipitation during the growing season resulted in many varieties being able to reach their genetic potential. The High Plains of Texas should break the record for longest average staple at about 34.8 (previous record was 34.4 in 1996, and slid precipitously to a low of 32.4 in 2000 due to poor environments and inadequate genetics). In 2005, a record for bales classed with $\geq$34 length staple, at about 83% of the 5.55 million bales. The previous record was 1996 with 79% on 3.13 million classed. For staple of $\geq$35 length, another record was set at over 60% of the crop. Again, the previous record was held by 1996 with 48% of the bales classed in that category. For staple of $\geq$36, fully one-third or 33% of the 2005 crop should fit into that category, again a record amount, which broke the previous record of 2004, which had 19%. Although hard to believe, according the AMS Classing Offices at Lubbock and Lamesa, we will have 10% of the bales classed there with a 37 or longer staple. On the 5.55 million bale 2005 crop, that amounts to over 500 thousand bales with a 37 or longer staple. Due to the aggressive use of harvest aids and dry weather for harvesting and ginning, the 2005 crop will break all

previous records for color also. We should produce at least 75% color grades 11 and 21, the highest quality values possible. Bark contamination was also among the lowest ever recorded, with essentially 90% of the crop bark free. Average leaf grades will be in the 2.8 range, which is excellent.

Due to excellent growing conditions (and harvest and ginning period) and more acres of elite genetics on the land compared to several years ago, and were able to essentially reach the genetic potential for staple. In terms of bale volume for various staple length classes, the High Plains again produced record numbers of longer staple bales.

- 2005 staple $\geq$ 34 length = 83% of all bales (1996 had 79% of 3.1 million bales = 2.45 million total, compared to 3.26 million total for 2004, and 4.6 million for 2005).

- staple $\geq$ 35 length = 60% of all bales (1996 had 48% on 3.1 million bales = 1.49 million total, compared to 2.07 million total for 2004 and 3.33 million in 2005).

- staple $\geq$ 36 length = 33% of all bales (2004 produced an all time record high percentage of 20%, with 920 thousand bales with this staple; the 2005 crop will shatter that record with 1.83 million bales in this category).

The impact of this could be described as follows. For a 35 staple (compared to a 34 staple, with same 21 color, leaf grade 3; loan rate of $0.5435/lb), the CCC Loan Chart for 2005 indicates there is a 190 point premium (loan rate of $0.5625). For 3.33 million bales, that translates into $30 million in potential premiums for the region. On a two-bale/acre crop, this amounts to a $18/acre quality premium above a 34 staple. This does not include any yield advantage which we have noted in many of our trials and have reported at numerous Extension meetings and in handouts.

Individual producers have indicated that the systems variety testing program is of significant benefit to them. In March 2004, a grower from Spur, Texas sent an e-mail, commenting as follows. “I would like to express my thanks for your assistance in selecting cotton varieties last year. Your information meant an additional $50,000 return for our farm since we did not have the 7 cent/lb dock for high micronaire. Production was very good in a very difficult year. Our production was in the premium price range on the loan chart (54 to 56 cents plus). All of this resulted in the least stressful refinancing period I have ever had in farming. Your information is in a format that is easily applied to our operation.” Other growers have responded to questionnaires submitted and have indicated that after surveying our project reports, they have changed varieties and increased staple length of the cotton produced on their farms.

Over several years, this Soil and Crop Sciences project group has undertaken a project to fundamentally change cotton stalk destruction on the Gulf Coast and in Central Texas from a mechanical process to the use of a well defined BMP with herbicides immediately following stalk shredding. It has had a profound impact on the mortality of cotton stalks and a proportional decrease in favorable feeding sites for cotton boll weevils. In 2005 the unit distributed 8,000 copies of a stalk destruction publication describing BMPs for stalk destruction in the Rio Grande Valley, Coastal Bend, Upper Gulf Coast, Brazos River Valley and Southern and Northern Blacklands production regions. The Boll Weevil Eradication Foundation estimates that due to

this comprehensive educational program that 60% of the acreage (about 664,000 acres) was treated with herbicides for stalk destruction.

The shortage of moisture during crop production remains the one variable which most limits yield and sustainable crop production. Water availability in the state has been identified by many sources as the number one concern of public officials and citizens alike. It is documented that conservation tillage systems typically conserve between 1- and 2 inches more stored soil moisture when compared to crops produced conventional tillage systems. The educational programs of Texas Cooperative Extension and partner agencies has resulted in a significant trend towards the adoption of high residue crop production with reduced tillage practices. In addition to reducing fuel, equipment and labor usage in crop production, reduced tillage practices on 3.9 million acres of cropland are estimated to conserve 6 million acre inches of water from precipitation and irrigation, as well as reducing soil erosion and stream sedimentation by significant amounts.

The Texas IPM program continues to conduct outstanding work that has a major impact on Texas crop production. The program averages 300 applied research projects, 12,000 farm visits, 250 county meetings and 140 crop tours and field days annually. The program also leverages state funding by averaging $500,000 annually in extramural funding. With the reduction in entomology programs at major universities and the emphasis on basic research, college students have limited opportunities to participate at the field level. An internship program addresses the lack of field experience and exposes high school and college students to Extension. The program has provided internships for 43 students from 1998-2004. An evaluation of the program was conducted in 2004 to measure the impact of the program. The survey asked the interns a series of questions that rated the value of the program on a 1 to 5 scale (1=very valuable and 5=no value). The interns rated the program very high averaging a 1.5 rating for all the questions. Interns indicated that the program helped to clarify educational goals and made their current college courses relevant. The program also taught the interns new skills and techniques and helped to decide their future careers.

Student comments about the IPM program included; “Although I am no longer in the Ag field, it was a great learning experience that taught me things that I can use everyday regardless of my career” and “the only improvement would be to let more people know about this great opportunity. This is an experience that every agriculture student should have.”

With the increasing urbanization of the state, ornamentals are comparable in value to our highest value field crop, cotton. One IPM Specialist helped a tropical hibiscus grower in developing an IPM program that reduced insecticide use by 75% (from 4 applications reduced to 1) and reduced costs by 17%.

An Extension Entomologist in Bryan conducted a large scale experiment at a commercial grower operation demonstrating efficacy of biological control as an alternative to pesticide based pest control methods. Using a tropical vine crop and two spotted spider mites as a model crop-pest system, he demonstrated the relative cost of predatory mite releases can be cut in half by using a generalist and more persistent predatory mite instead of a specialist one. The monetary cost (and efficacy) of biological control was similar to that of weekly applications of miticides, but the actual cost may be even lower when accounting for opportunity costs (workers must stay out of the greenhouse when pesticides are sprayed and plant materials cannot be sold with pesticide residue) and environmental and health risks of miticide applications. His study demonstrates biological control can be a cost-effective pest management tool for greenhouse crops.

The Texas Boll Weevil Control Foundation directs a program that has now been approved on all of Texas' cotton production acreage. Seven of the sixteen zones (4.4 million acres) have reduced boll weevil populations to the point where they are declared "suppressed" (the step before functionally eradicated) by the Texas Department of Agriculture. Texas now has 5.3 million acres of cotton with boll weevil populations low enough to qualify for quarantine protection against re-infestation. Preliminary studies indicate a benefit-cost ratio ranging from approximately $1.82 to $3.54 for every dollar spent.

The Statewide IPM coordinator pulled together highlights from EA-IPM surveys in 2004. Producers in Parmer and Bailey counties increased net profits by $43.50 (range of $10-$100) by participating in the IPM program. Producers surveyed valued the IPM program at $68.50 when considering net profit, information, educational value and other intangible benefits. Producers in Williamson and Milam counties valued the IPM program (transitional research, on-farm visits, crop monitoring and newsletters) at $23.00/acre for corn, $15.00/acre for grain sorghum and $33.00/acre for cotton. Producers receiving the IPM newsletter in Terry and Yoakum counties valued the IPM program from $5.00 to over $20.00 per acre with 42% placing the value at $10-20 per acre.

An Extension Entomologist at Corpus Christi has conducted seed treatment trials on corn over the past five years. In these studies, it was found that a corn grower receives a $9.00 per acre benefit by using the technology. One corn producer indicated that the direct economic impact on his farm in 2004 was $9,000 (on 300 acres).

The imported fire ant has been identified as a major pest in improved pastures. The release and establishment of parasitic flies from South America for biological control of the red imported fire ant continues to be successful in managing this insect. On May 18, 2005, a student collected a second, new species of "phorid fly", *Pseudacteon curvatis*, released at Five Eagle Ranch near Caldwell (Burleson County). This site has already been a successful release site for the first species to be released, *P. tricuspis*, which has spread 6 to 9 miles from the initial release site since 2003, and is the first site to now have both species established. On June 3, 2005, an Extension Assistant, collected a *P. tricuspis* from a fire ant mound near Livingston in Polk Co. This is the first re-capture of releases made by County Extension Agents in November 2004. These programs are collaborative efforts between TCE, the United States Department of Agriculture's Agricultural Research Service (USDA-ARS) and Plant Protection and Quarantine's Animal and Plant Health Inspection Service (USDA-PPQ,APHIS. Successful establishment and spread of these natural enemies of the red imported fire ant could potentially lead to sustainable suppression of this exotic pest which currently has an annual impact of $1.2 billion in Texas.

A Far-West Texas Extension Entomologist) worked with the Williams Ranch Farms manager who was concerned that their alfalfa (3000 acres) was infested with economically damaging aphid and alfalfa weevil population densities. The alfalfa was examined and found that pea aphid and cowpea aphid population densities were indeed high enough to warrant insecticide treatment in about 600 acres, but not the remaining 2,400 acres. Additionally, alfalfa weevil densities were extremely low and required no treatment. At $6- to 8 per acre, the savings to Williams' ranch was approximately $16,000. Also, conservation of the beneficial arthropods (lady beetles and green lacewings) found in the untreated alfalfa may maintain aphid populations below economically damaging densities so that future insecticide treatment may not be needed. At another location, McKenzie farms owner was concerned with pea and cowpea aphid and alfalfa weevil population densities in his alfalfa. Another examination of the alfalfa revealed that pea aphid, cowpea aphid, and alfalfa weevil population densities were currently not an economic

threat, thus saving the producer approximately $2400 in cost savings due to no insecticide application. This specialist also worked with a pecan grower on 600 acres of pecans to manage pecan nut casebearer. Populations were extremely high and a decision was made to treat the orchard. Based on previous tests in working with this crop and pest, this decision should result in $500,000 in gross income to the producer by preventing excessive loss from pecan nut casebearers.

Stored grain pests cause major losses in quality and value in the warm, humid regions of the Texas Gulf Coast. An Extension Entomologist at Corpus Christi continues to find dramatic results can be obtained from evaluation of stored grain insect protectants. After 17 months in storage, non treated corn has lost 12.7% of the initial weight; whereas, the best treatment lost 0.1% of the initial weight. Weight of the non treated corn was made up of 3.7% dust created by insect feeding, but the treated corn averaged 0.11% weight as dust. The results are surprising considering the length of time in storage. Stored grain managers will be able to select and use with confidence materials being evaluated, shrinkage (grain weight loss) will be significantly reduced, and higher quality grain will be obtained. This research was taken out into the field for a two year experiment to evaluate insecticides on stored grain with outstanding control of all insect pests. TCE assisted an on-farm grain storage manager in DeWitt County with his insect control program. Sampling on three dates and examination of the corn as it was shipped one year later revealed no insect pests. As a result of the demonstration, a neighbor noting the success of the program compared with the losses he suffered during the same time period adopted the products to treat 4 million pounds of corn during the current harvest. We estimate that this corn producer lost 5% of the last corn crop and had extra labor cost to remove damaged grain caked to bin walls. The producer should save over $8,000 annually in weight loss prevention. We expect none of these losses with the treatments he adopted.

Texas ranks as the top beef-producing state in the United States with an estimated 13 million cows. Many insect pests, such as the horn fly, *Haematobia irritans*, which is a blood-feeder, colonize animal wastes and develop into high densities that affect beef production. At the present, management of horn fly populations on beef is primarily achieved with insecticide impregnated ear tags. However, relying on one type of control measure has led to resistance problems such that horn fly populations can impact beef production. The objective of this study was to determine if Dimilin, which is typically applied to pastures to suppress grasshoppers, would suppress associated horn fly populations. The development of this technology would provide producers a less expensive alternative and lead to increased profits.

The trial resulted in a 30- to 40% reduction in fly numbers. The economic advantage to producers could be significant. On average, cattle gain 1.5 to 2 pounds weight per animal per day, while heavy infestations of horn flies can reduce weight gain by 0.5 pounds per day. If cattle are placed immediately on the pasture after treatment, this could equate to approximately an increase in weight gain per animal of 10.5 pounds for a value of $10.81/animal. The economic impact (additional dollars generated due to suppression of horn flies) by site is presented in Table 1. This study does not take into account additional forage saved by suppressing grasshopper populations.

Table 1. Expected economic impact of allowing cows to feed on pastures treated with Dimilin for grasshopper control.

Site	# of cows	Expected increase in beef production (pds/herd)	Economic value* saved ($1.03/pd beef)
Stephenville	52	546	$562.38
Dublin	20	210	$216.30
Belton	88	924	$951.72

Texas corn growers lost their primary and most effective miticide due to the development of insecticide resistance. When field failures of the miticide were first reported in 2000, TCE personnel joined with New Mexico State University personnel to conduct joint research projects aimed at finding new miticides quickly and generate the data that would allow industry to get these products labeled for use on corn. This close cooperation has resulted in three years of valuable data that were used to help register two new miticides on corn, effectively restoring Texas corn growers' ability to control spider mites. One miticide has now received full Federal registration, and the other is available through a Section 18 exemption. This miticide will receive a full Federal label in 2007.

The data generated from these trials was shared not only between Texas and New Mexico, but also with Kansas State University. In return, Texas and New Mexico received data from the one miticide trial that Kansas was able to successfully conduct in the last four years. All of these trials were pooled when Texas requested that TDA pursue a Section 18 exemption for one of the miticides. The resulting data packet was sufficient to allow the Section 18 to be granted. Texas personnel wrote the 14-page Section 18 request and shared it with New Mexico and Kansas, and these states can use the multi-state data to get their own Section 18 exemptions. Additionally, because the Texas/New Mexico trials compared candidate miticides to the few registered (and less effective) miticides, the data were used by one company to support and obtain a full Federal label for their miticide in 2004.

A TCE Extension Economist at Amarillo found that the inability to control a severe spider mite outbreak on 35 percent of Texas High Plains corn acres could lower net revenue by 64 percent. Presumably, the economic benefits of the new miticides will be similar to the cost of mite resistance to the formerly effective miticide. Based on 1998- 2003 averages generated from corn production, he projected that insecticide resistance (lost control) could decrease net revenue from $49.6 million to $17.9 million, a loss of $31.7 million. Severe spider mite outbreaks occur on average once every four to five years, and severe status is reached when 20-50 percent of acres are heavily infested. Realistically a 50 bushel yield loss might result from a severe infestation. This would decrease net revenue per acre in irrigated corn from $66.88 to $24.12 (based on 1998 through 2003 data).

More than 70 per cent of the 157 millions acres of Texas agricultural lands are classified as rangeland and permanent pastures. These lands produce the forages that sustain the Texas grazing livestock industry. The value of forages is largely measured through the value of the livestock that consume them. Forages supply about 70 per cent of the lifetime nutrients consumed by Texas livestock. The most recent cash receipts for all forage-consuming livestock in Texas were about $7 billion, with nearly $6 billion attributed to beef cattle. An educational program has been designed to reduce winter feeding costs of beef cattle and other livestock by establishing forage management systems which create year round pasture by the incorporation of annual legumes and ryegrass into management systems and through the use of stockpiled hay.

This program has been very successful as indicated by the increased interest reported by County Agents from their producers in east, central and south Texas. The potential cash savings per cow per winter are enormous. The average savings for cow-calf operators approximates $100 per cow due to reduced winter feeding costs and lower fertilizer requirements for hay meadows. If this dollar amount is multiplied by the 3.2 million head of beef cows in the eastern one-third of Texas, there is a potential economic impact matched by few other programs in the state. One case study utilized this protocol and initial input costs for fertilizer on hay meadows have been reduced by over $6000 in one year, or approximately $60/head. Continued implementation of the program will result in increased adoption of sustainable pasture management techniques and additional savings for Texas ranchers and cow-calf operators.

Another example of a successful educational program targeting pasture and land management is the Pasture & Livestock Management Workshop for Novices. This joint TAES-TCE program targets urban absentee landowners who have a limited understanding of the soil-plant-animal interface. An intensive 3-day event is held annually at the Texas A&M Research and Extension Center at Overton. Both directly and indirectly, information provided by this workshop helps insure the wise use of the state's natural resources by this growing non-traditional clientele. The demand for this short course has resulted in a waiting list for interested participants. A follow-up, advanced course is now being offered for graduates of the introductory course. This has caused forage faculty with TCE and TAES to initiate new courses which will be offered at Huntsville in conjunction with Sam Houston State University and at Stephenville to help satisfy the demand for information by new and absentee landowners in forage and land management.

The feedyard industry is currently the largest consumer of silage in the Texas High Plains. However, dairy production in the area is steadily increasing and should create additional demand for quality silage. With the decreasing water table and increasing demand for silage, irrigation water may soon be the limiting factor in beef cattle and dairy production. Sorghum silage requires about 45% less water than corn, but growers have not widely produced this crop because of a preference for corn silage by the feedyards. Our research has show that some sorghum silage hybrids contain energy values similar to that of corn silage. Because of declining water levels and increased pumping costs associated with high natural gas and diesel used in irrigation wells, the production of corn silage in some locations cannot be sustained. However, new genetics in sorghum may provide an opportunity for an alternative crop to corn that would reduce water usage but produce acceptable silage for the cattle feeding and dairy industry. Based on the research and education programs associated with this 6 year project, several of the major feedyards are now buying sorghum silage that previously had only purchased corn silage, and the National Sorghum Producers Association is adopting a list of "blue ribbon" sorghum silage hybrids that have both quality and yield sought by dairies and feedlots. The criteria for this blue ribbon list will come solely from the research and extension program conducted by faculty at the Amarillo Center.

The Texas 303(d) list is a list maintained by the TCEQ of water bodies which have exceeded or are threatening to exceed accepted levels of one or more contaminants. Eight water bodies which provide public drinking water in the Central Texas Blacklands were placed on this list in the late 1990s due to the presence in these lakes of atrazine, a popular corn, sorghum and turf grass herbicide. Upon determining the threat to public water supplies, specialists from the Department of Soil and Crop Sciences took leadership in an educational effort designed to reduce off-target losses of atrazine. They brought a group together which included state and

federal agencies, industry and agricultural producers to focus on developing BMPs to mitigate the problem of off target atrazine runoff, while allowing continued use of this inexpensive, yet highly effective herbicide. It is estimated that loss of this herbicide would increase weed control costs in the affected areas by approximately $45 million annually. Prolonged presence of excessive concentrations of atrazine in surface water supplies would most likely lead to label cancellation and withdrawal of the herbicide from current uses.

This work has been targeted to corn and sorghum producers in the Central Texas Blacklands where the eight atrazine-impacted watersheds lie. Our goal is to reduce off-target losses of atrazine from surface runoff while allowing producers access to atrazine in their toolbox.

From a water treatment standpoint, reduction of atrazine to below 3 ppb (the maximum contaminant level) costs a water supplier $15 per 1,000,000 gallons of water treated. An estimate of this increased cost can be calculated. For example, the Aquilla Water Supply District which supplies 2.36 million gallons a day, the annual cost of treated for one ppb of atrazine is estimated at $12,921. For the City of Cooper which supplies 0.492 mgd, an annual treatment cost is estimated at $2,694. However, if having to supply their customers with an alternative source of drinking water (required by TCEQ and the US-EPA if an MCL violation has occurred), costs for meeting just the daily human consumption (one gallon per day) demands of both water supply systems could reach approximately $10 million per year.

By involving corn and grain sorghum producers in the program, ambient lake concentrations for atrazine in Big Creek Lake near Cooper, Texas has decreased from a level above 3 ug/L in June of 1998 to below detection limits by late 2004. In the Aquilla watershed, atrazine concentrations in Lake Aquilla have dropped by over 60% to levels well below the one half MCL (trigger point for listing/delisting on 303(d)) of 1.5 ppb. Similar trends in concentrations are being noted throughout Aquilla watershed from the TAES/TCE monthly and storm water sampling program completed in 2004. This data combined with continued TCEQ water quality monitoring associated with Lake Aquilla shows lake concentrations for atrazine in Lake Aquilla are now meeting water quality standards. In 2004, TCEQ and TSSWCB approved the delisting of these water bodies as well as Richland-Chambers Reservoir, Lake Tawakoni, Lake Lavon, and Lake Joe Pool. These recommendations are currently being reviewed by Region 6 of the US-EPA for final approval. By delisting these lakes, TCEQ and TSSWCB are confirming that these water bodies which provide drinking water to over 1.5 million Texans are now meeting water quality standards for atrazine. This has proven to be a major victory in pollution prevention through education and the implementation of best management practices. It should be noted that Marlin City Lake was delisted in 2002 through similar efforts and the final two lakes (Bardwell and Waxahachie) are expected to be recommended for delisting when the 2006 303(d) list is prepared.

While somewhat dependent upon crop species and location; herbicides are the most widely used class of pesticides. The judicious use of herbicides reduces the expense of crop production by reducing tillage and labor demands; enhances crop yields by minimizing competition with weed species, improves crop quality by reducing foreign matter and moisture in the crop at harvest and reduces spoilage in post harvest storage. The adoption of transgenic crops by Texas farmers has met with a very wide acceptance. Texas Cooperative Extension in collaboration with TAES are largely responsible for disseminating information related to utilizing new weed management systems in an environmentally safe manner. In 1996, the first transgenic crops were commercially planted in the state. This amounted to less than 25,000

acres of soybeans, with no transgenic traits in cotton and corn. In 2005, it was estimated that 80% of the state's 230,000 acre soybean acreage was transgenic, 56% of the state's 5.93 million acre cotton crop and 35% of the state's 2.05 million acre corn crop were transgenic. To accomplish this rapid large scale transition to genetically enhanced varieties, Extension faculty initiated approximately 300 weed management trials in 2004, as well as large scale plots in the Texas High Plains to compare the value and production expense of transgenic technologies in cotton. Hundreds of educational events were conducted which discussed the new technologies, utility of the transgenic traits in aiding insect and weed control, and potential drawbacks regarding technology fees, marketing and impact on yield and quality. The herbicide and insect resistance in these major field crops has significantly reduced crop production risk, allowing farmers to produce food, feed and fiber with less production expense, improved environmental quality by allowing farmers to use more environmentally benign herbicides as well as using thousands of tons less herbicides and insecticides. These transgenic crops have also allowed the development of no-till and high residue conservation tillage crop production systems which reduce erosion, decrease consumption of fossil fuels, decrease production cost and improve wildlife habitats.

In South Texas, the Sorghum cropping systems program investigated alternative strategies for cropping systems management. Row spacing studies comparing 15, 19 and 20 inches showed significantly better yields compared to conventional row spacing (36, 38 and 40 inch row spacing). Plant populations of 50,000 and 70,000 plants/acre in coastal irrigated and dryland areas, respectively, significantly improved yields and profit margins. Studies also showed that Gaucho and Cruiser seed treatments and granular Counter provided net returns of $42 to $69/acre through control of yellow sugarcane apid. Systemic insecticidal seed treatments improved crop returns from $2 to $24 per acre. Field studies of newly developed foliar micronutrient treatments increase grain yields by 16%, providing an $18.53/acre return above product and application costs. In the Rolling Plains, sorghum/cotton cropping systems that include interseeded rye were used to capture rainfall and produced yields of both crops which were well above long-term averages. In the Southern High Plains, rotation studies showed a 26% increase in lint yields with 19% less seasonal irrigation for sorghum-cotton rotations compared to continuous cotton.

Educational programming and collaboration between and among several agencies have been used to expand the use of nutrient management planning in crop production systems. This includes training programs for industry and consultants and efforts to enhance the adoption of soil testing as an important economic and environmental BMP. The following paragraphs include examples of programs in these areas.

Field correlation studies to evaluate current soil test phosphorus recommendations were conducted across the state in both field and forage crops by TCE and TAES. At the same time, laboratory evaluations were conducted to compare alternative extractants for determination of soil test P. Joint efforts also were conducted with Oklahoma State, Louisiana State and the Noble Foundation to improve the strength and consistency of recommendations for agricultural producers. As a result of these efforts, the TCE Soil Testing Laboratory adopted the Mehlich III soil test extractant in January of 2004. Field and laboratory studies are ongoing in collaboration with public and private laboratories in Texas and surrounding states to create a uniform Mehlich procedure and a uniform field sampling procedure which will correlate well with environmental samples.

Texas Cooperative Extension, working with USDA-NRCS developed and implemented the Texas Certified Nutrient Management Planner program. The course and exam certify individuals affiliated with the government, private consultants and/or growers to develop nutrient management plans approved by state water resource agencies. The 4-day training event has been conducted 18 times at locations across Texas. To date, a total of 260 professionals have been trained, with 205 receiving full certification. All future new and revised state and federal conservation plans will be impacted by this program.

Nutrient management education for field and forage crop producers also was conducted through a series of 43 county and regional meetings and workshops which provided educational information and resources to over 8,800 producers in 122 counties regarding soil testing and nutrient management.

Soil Testing/ Nutrient Management Campaigns in the Blacklands, Coastal Bend and Lower Rio Grande Valley regions of Texas were conducted by TCE in cooperation with USDA-NRCS, Texas Commission on Environmental Quality, Texas State Soil and Water Conservation Board, and other agencies, as well as in cooperation with numerous commodity support organizations, including Cotton Incorporated. In one 4-county program conducted in the Lower Valley, 746 samples representing 38,000 acres (a 67% increase in the use of soil testing in the area compared to the previous year) were obtained. Results of the testing showed the potential for growers to reduce fertilizer applications by 869,883 lbs of nitrogen and 1,390,847 lbs of phosphorus compared to rates proposed before testing. In addition to the environmental benefits, the total economic impact for producers was estimated at $553,612 based on average per pound costs of nitrogen and phosphorus. Average per acre savings for major crops in the regions ranged from $11.64 to $25.53.

Soil science research has determined chronological effects of soil and crop management practices on soil quality, nitrogen cycling, carbon sequestration, and fractionation into different organic matter pools which will enhance the efficiency and productivity of cropping systems while maintaining environmental quality. Research by the same project leader identified significant residual nitrate in soil profiles of monoculture cotton from the Rio Grande Valley to the Southern High Plains which will improve the economics of crop production in light of high price of nitrogen fertilizer, and for water quality and associated human health.

The Texas A&M ryegrass-breeding program continues to have a significant impact on the livestock industry in Texas and in Oregon. Several million pounds of the variety TAM 90 are produced in Oregon and planted annually in Texas. Collaborative programs between TAES and TCE have shown that the use of ryegrass in conjunction with winter annual legumes significantly lowers the winter feeding costs for cattle.

Emphasis in the forage improvement program is presently being placed on the development of forage cultivars which may also be used as food plots for wildlife. Efforts are underway to develop a new Lablab cultivar, a low coumarin sweetclover, cowpeas, and several new annual medics. The release of four bundleflower cultivars (Bedes 06, 08, 37 & 57) which will be marketed as a blend (‘BeeWild’) is anticipated to positively impact both livestock and wildlife industries.

Forestry research has focused on ecological, evolutionary and population genomics of conifers and other gymnosperm plants. The most important impact is on how forest genetics and breeding diverges greatly from its agricultural counterpart. This has implications for federal, state and corporate policy and public investment in research. Results from this research is being used to assist with climate change forecasts in the southern U.S. pine forests, and in developing

an understanding of why the ancient conifer genome changes so little in comparison to flowering plants. This latter will be important in elucidating higher plant genome evolution. The tree growth rate research has immediate relevance to genetic gain per year in breeding programs for U.S. timber companies and researchers are working closely with commercial companies, Department of Energy and the USDA-Forest Service to transfer and implement this new technology.

Data on the 18,000-year ecological histories and unique generic descriptions of U.S. forests are being updated to include new information. Additionally, practical and effective silvicultural and management alternatives are being analyzed for restoring and sustaining pre-European settlement forests in the U.S. When complete, these descriptions and techniques can guide the management of protected forests, public working forests, and industrial forests. This research has led to the introduction of The National Historic Forests Act of 2001 (H.R. 2119) in the U.S. House of Representatives.

The Texas potato improvement program has developed and released improved early maturing russet, yellow flesh, and red varieties adapted to Texas growing conditions, to enhance the competitiveness of the Texas potato industry. The program cooperates with the North Dakota, USDA/ARS Aberdeen, ID, USDA/ARS Madison, WI, USDA/ARS Beltsville, MD, Oregon, Colorado, and Minnesota breeding programs through exchange of first-year seedling tubers and/or advanced selections. Twelve improved varieties have been developed/co-developed and/or released from the Texas Potato Breeding and Variety Development program. Virtually all of the russet potatoes grown in Texas in 2005 were the improved Texas Russet Norkotah strains. When this program was initiated in 1973, the average yield of the summer crop in Texas was about 200 Cwt/A. Now the average summer crop yield in Texas is in the range of 440 Cwt/A, the highest in the nation among the 12 states with summer crop production. In addition, the farm gate value of the crop has grown from less than $20 million to about $70 million with an annual economic impact to the state estimated to exceed $150 million. Of all of the potato varieties released over the past 15 years by the 12 potato breeding programs in the U.S., those developed by the Texas A&M program rank second nationally in total acreage approved for seed certification in 2005. This is especially significant because the state does not have a potato seed industry to promote Texas varieties.

The Texas cowpea research program continues to develop pinkeye, black-eyed, and cream varieties possessing improved plant architecture, high yield, and disease and drought resistance. The related program on mungbean continues developing improved varieties with synchronous flowering and improved yield and sprouting characteristics. The Texas mungbean release, 'TexSprout', is grown nationally and internationally. The program continues screening investigations for chlorosis in cowpea grown on high pH soils. Recent studies have also been aimed better understanding the inheritance of antioxidant activity and its association with seedcoat color in cowpea. This work has determined that breeding for high antioxidant activity is possible using highly pigmented parental lines.

The peanut industry is demanding high oleic/linoleic oil peanuts for improved flavor and enhanced shelf-life of peanut products in the U.S. marketplace. The release of three new peanut cultivars, OLIN and Tamrun Ol01 and Tamrun OL02 is having a huge impact on the Texas peanut industry. In 2003, yields of Tamrun Ol01 approaching 5,000 lbs/ac were recorded in south Texas. The success of this variety is directly responsible for the increase in acreage of peanuts in south Texas in 2004. A conservative estimate of value for these lines (increase over present varieties) to Texas Peanut Growers is as much as $20 million per year after the seed

increase generations have been completed. With the harvest completed on the 2005 crop, value added due to the high oleic lines and high yielding lines from other breeding programs due to Texas A&M variety testing and educational programs was estimated at $1.9 million.

Competition among cotton producers in a global market and a decreasing genetic base make it imperative that cotton be improved for Texas' producers. About 15 varieties are commercially available that contain germplasm from the Texas program, and significant improvement in fiber quality of cotton produced on the Texas High Plains has placed Texas cotton in demand by the textile industry. The quality of our cotton ranks second only to California. The high quality germplasm released from the Texas program for use in varietal development has improved the selling price from 2 to 5 cents per pound of lint.

A College Station based sorghum breeder identified the genetic basis of sugar production in sweet sorghum which increases biofuel potential of this renewal agricultural resource for bioenergy production. With a major national emphasis on enhancing self reliance and renewable energy resources, this discover holds great promise in enhancing ethanol yields from sweet sorghums and forage sorghums. This breeding program also developed and released sorghum inbred lines that have been adopted by private sorghum breeders in drought tolerance, disease resistance and grain quality for sorghum hybrids grown in the U.S. and throughout the world.

The nutrient value of sorghum as a food product has long been ignored in the U.S. A Soil and Crop Science food scientist recently found significant levels of non-tannin bioactive compounds in certain sorghum types that have significant potential in improving human health. He also confirmed that special black sorghums with genes that give a pigmented testa have high levels of condensed tannins along with high levels of anthocyanins which could produce foods with improved health benefit due elevated levels of antioxidants. These new sorghums have antioxidant levels that surpass blueberries, which to this point have been the standard for health foods with respect to antioxidants. He demonstrated that these black sorghums can be easily decorticated to produce bran with high levels of dietary fiber and antioxidants. Along with this line of research, prototype research products from special sorghums with dark natural color also enhanced dietary fiber levels.

Sorghum downy mildew, a potentially devastating disease of grain sorghum been kept under control primarily by the use of resistant grain sorghum hybrids and seed-treatment fungicides containing the active ingredient metalaxyl. Recently, a new variant (pathotype) of the downy mildew fungus was discovered when the disease became prominent in fields planted to resistant grain sorghum hybrids in several counties on the Texas Upper Gulf Coast. Research and extension faculty of the Department of Plant Pathology with Texas A&M University identified the problem as a new pathotype of the pathogen which was capable of overcoming the host resistance to pathotype 3, the most predominant pathotype in the Upper Gulf Coast. The new pathotype is also resistant to the widely-used seed-treatment fungicide metalaxyl. Grain sorghum germplasm is now being screened for resistance to the new sorghum downy mildew pathotype.

Asian Soybean rust is a devastating disease of soybean, newly introduced into the United States, and is projected to cause significant yield loss in United States soybean production in the near future. In Texas, a system of sentinel plantings of soybean-rust-susceptible plants has been established during each growing season to detect soybean rust early enough to alert growers of its progress in a timely manner. Grower educational programs have been conducted in all the soybean productions areas in Texas. Field tests have been established to evaluate fungicide efficacy and timing.

Competition among cotton producers in a global market and a decreasing genetic base make it imperative that cotton be improved for Texas' producers. About 15 varieties are commercially available that contain germplasm from the Texas program, and significant improvement in fiber quality of cotton produced on the Texas High Plains has placed Texas cotton in demand by the textile industry. The quality of our cotton ranks second only to California. The high quality germplasm released from the Texas program for use in varietal development has improved the selling price from 2 to 5 cents per pound of lint.

It should be noted that the crop improvement programs conducted by TAES represent a partnership with TCE specialists and county agents, farmers, consultants, and agribusiness in Texas as the germplasm, parental lines, and varieties which are ultimately released are tested statewide prior to release. Grain sorghum and cotton in the Texas Coastal Bend area that yield of grain sorghum may be sustained better using lower plant populations (30,000 to 40,000 plants/ac in 38 in.-rows) under severe dryland conditions. Cost of production is also lowered using lower plant populations (60,000 plants/ac) under irrigated conditions. Grain sorghum yields are dramatically increased (20-25%) using narrow rows (double rows 12" apart in 38 inch beds) under irrigated conditions. Double rows also increase yields under mild dryland conditions. Lower planting populations (30,000 plants/ac in 38"-beds) also sustain yields better in cotton compared to higher populations normally used by farmers in South Texas.

C. Source of Federal Funds

TCE: Smith-Lever and state matching
TAES: Hatch, and state, federal and private contracts and grants

D. Scope of Impact

Multi-State Extension - OK, KS, GA, MS, AR, TN, KT, NM
Multi-State Research - AL, AR, CA, LA, MO, MS, SC, CO, ID, ME, MI, MN, ND, OR, WA, NE, NM
Integrated Research and Extension: Breeders work, closely with their extension counterparts in the field trials and evaluation of new cultivars, varietal plantings and demonstrations of advanced lines for county agents, farmers, and specialists.

State TCE-TAES Plan of Work Program 3: Livestock Quality and Profitability

Key Theme: Agricultural Competitiveness, Agricultural Profitability

A. Description of Activity

Texas ranks first in the nation in total livestock value and also has the broadest spectrum producers and variation in production environments. High production costs and variable sale receipts for all livestock species necessitates adoption of best management practices to efficiently produce livestock and their resulting end-products that are cost-competitive with consumer alternatives while meeting the food quality and safety standards expected by our society. Educational programs are needed to increase producer awareness of consumer concerns and implementation of advancements in research proven production practices and developments in technologies to meet those needs while increasing net returns from livestock operations.

B. Impact of Programs

Research and education programs will focus on livestock genetics, nutrition, reproduction, both enhanced value and cost effective best management practices and how producers can increase profitable production efficiency while still producing high quality, safe, wholesome end products. Specific livestock recommended management practices in selection, nutrition, reproductive physiology, health, identification and meat science will be emphasized. Other factors that influence product acceptability in the market such as marketing methods and food safety issues will be stressed. The target audience is composed of beef cattle, horse, dairy, sheep, goat and swine producers, commodity group leadership, Extension educators and youth enrolled in 4-H and FFA livestock projects. Partnerships have been established with CSREES, NRCS, Texas A&M College of Veterinary Medicine, TAMU College of Agriculture and Life Sciences Departments (Ag Economics, Ag Engineering, Entomology, Rangeland Ecology and Management, and Soil and Crop Sciences), Texas Tech University, West Texas A&M University, Oklahoma State University, New Mexico State University, Texas Beef Council, Texas Cattle Feeders Assn., Independent Cattlemen's Assn., Texas Association of Dairymen, Texas Pork Producers Assn., Texas Sheep and Goat Raisers Assn., Texas Quarter Horse Association, Texas Thoroughbred Association, the feed manufacturing industry, and Texas Farm Bureau.

TAGS (Texas Adapted Genetic Strategies), an Extension beef herd genetic training program compliments research in bovine genetic mapping. Genetic research on susceptibility to disease is a problem for animal production and has enhanced the Extension Beef Quality Assurance health management practices education component. Texas researchers have addressed this need using high resolution, ordered comparative maps of bovine chromosomes relative to the chromosomal maps of humans and mice and to provide biological reagents for bovine genome mapping to the research community. Already, they have placed 2000 conserved markers on an ordered radiation hybrid map of the bovine genome. All have known map positions in the human genome. This map has been completely integrated with the bovine linkage map.

Texas Beef Quality Producers have been certified through Extension BQA training emphasis on food production safety resulting from efforts in the validation and verification program of beef carcass decontamination collaborative research involving Extension specialists, scientists, and classroom educators to implement a stepwise process to determine industry

decontamination procedures and parameters currently in use. Cattle at the same facilities are sampled for the presence of Escherichia coli O157:H7 and an indicator bacterium. Laboratory testing of decontamination procedures is conducted according to industry parameters, and verification of pathogen reduction is tested in the laboratory followed by implementation in the industry. Educational materials, including an interactive CD, are being used by personnel in this work, and are included in formal university courses and industry-appropriate workshops. This work is providing a logical outline of microbiological data collection from the beef industry, combined with extensive laboratory studies to investigate the possibility of using non-pathogenic bacteria for validation and verification of decontamination critical control points in slaughter processing. Ultimately, the resulting educational materials and programs will be used by both industry and in formal university courses.

Three thousand four hundred (3,400) beef industry leaders have participated in Beef 706 to learn more about what creates value in beef carcasses and ways they can change management practices and genetics to enhance quality, consistency and value of beef products. Eighty percent (80%) indicated they would make different business and safety decisions in their ranching operation as a result of participating in this educational program and 100% said they would recommend attending 706 to other beef industry members.

Two thousand two hundred (2,200) producers from 14 states have evaluated 22,000 head of calves in the Texas A&M Ranch to Rail program to learn more about how their calf crop fits the needs of the beef industry and the traits that create value in beef marketing. They learned that they could increase their net return per head from $50 to $100 through retained ownership. They also learned that an effective health vaccination and weaning program at the ranch of origin reduced bovine respiratory disease at the feedyard to reduce production costs by more than $90 per head.

The database on the 22,000 entries in Ranch to Rail revealed that administration of specific viral vaccines, and the timing of their administration and the days weaned prior to marketing greatly impact production efficiency and carcass quality. The outcome of this result led to development of the Value Added Calf Vaccination Management program (VAC). The four largest cattle marketing organizations in the state have adopted the VAC guidelines and have special feeder calf sales that have resulted in increased values for ranches in excess of $70 per head due to industry demands for healthier cattle.

The drought of 2005 brought about significant shortages in both grazing and hay for livestock owners and producers across the state. Animal Science Specialists with educational responsibilities in beef, horse, sheep/goat and dairy actively addressed the drought situation. Collaborative efforts included Soil and Crop Sciences, Rangeland Ecology and Management, the Texas Veterinary Medical Diagnostic Laboratory, and the College of Veterinary Medicine. Six (6) Animal Science Specialists made available 18 subject matter publications, six radio briefs and numerous news releases related to managing livestock in drought conditions. With such material in place, 2005 ended with TCE positioned to better educate livestock owners as hay and grazing shortages continue into 2006.

The Annual TAMU Beef Cattle Short Course has hosted 24,900 beef cattle producers since 1990, averaging over 1,400 participants annually. Participants of the three-day event are exposed to a variety of topics that include current industry issues, forage management, reproduction, genetics, nutrition, beef quality assurance and record keeping. Participants mirror Texas beef producer demographics related to herd size, acreage and many characteristics of beef cattle producers. Annual evaluations indicate that 90 % expect to adopt learned management

practices that represent an $80 per head increase in net value, or an increase of just over $5,000 annually for the average sized beef cattle operation. With 88 % of participants ranking the short course as excellent, 90 % indicated they would continue to use the TAMU Beef Cattle Short Course as a future information source for beef cattle production.

The Southwest Beef Symposium, tailored for west Texas and New Mexico beef producers, focuses on range-based ranching operations. In 2005, there were 135 producers that represented almost 500,000 acres of rangeland and 30,000 head of cattle.

Collaborative reproductive performance research results and Extension demonstrations involving beef cattle herds indicate use of artificial insemination, selected and short calving seasons, and breeding soundness evaluation of bulls can easily interpret into an increased $100 per head of exposed cows in the beef herd.

The Texas Pork Quality Assurance Youth Program was created and a curriculum was developed to educate the 26,000 youth swine project exhibitors annually at livestock shows on food and pork quality wholesomeness. More than 500 County Extension Agents and Vo-Ag instructors have been trained to deliver the curriculum. The National Pork Board has adopted the curriculum and created a handbook distributed nationally. This national curriculum was further developed into an interactive distance learning module by TCE faculty. Released in 2005, this module was distributed via 12,000 CD's.

Sheep/goat specialists' efforts with the Hair Sheep Initiative and 'A Gathering of Goat Producers', educated and informed livestock and land owners about natural resource use and opportunities involving hair sheep and meat goats. The 4th Gathering of Goat Producers reached 275 participants from 4 states and Mexico. Known nationally as a premier educational event, papers from the proceedings ultimately appeared in trade journals and industry publications across the United States. Hair sheep are breathing new life into the domestic sheep industry. TCE hosted the 1st National Hair Sheep Symposium in San Angelo to increase awareness about production potential of hair sheep. This first symposium reached 250 participants, including a strong contingent from Mexico. These types of programs highlight the ongoing efforts by sheep/goat specialists to translate research-based recommendations, even to non-traditional sheep and goat producing areas, to promote the opportunities available to current and future producers.

Equine research in nutrition, exercise physiology and reproduction continued to be based on graduate training in the Department of Animal Science. In 2005, under leadership of one TAES faculty member and two TCE Horse Specialists, six (6) graduate students presented research papers at the 19th Equine Science Society meetings. Research-based information was again shared with horse owners at the annual Horse Industry Workshop Series, including the TAMU Mare/Foal Workshop which has now reached 1,199 individual mare owners representing 11,200 horses. A collaborative effort with a major feed manufacturer expanded the Mare/Foal Initiative via the creation of the 1st Equine Professional Symposium, where 16 breeding facilities represented 118 stallions and 11,107 horses kept on operations ranging from 150 acres to 7,000 acres in size. Outcomes included the development of Reproductive Performance Measures and updated criteria for computer software to be used in breeding farm management. Research and educational cooperation included the Department of Ag Economics, College of Veterinary Medicine, two major breed associations and five (5) sources of research/education support. Continuing education with the feed manufacturing industry reached 180 territory managers and veterinarians from Texas, 16 other states and four (4) foreign countries. Outcome measures indicated that attendance at horse owner programs was representative of the typical horse-

owning household across the state. Well over 90 % reported increased confidence in decision-making, and 55% reported management changes associated with eliminating an old practice or adopting research-based management practices. Owners learned to decrease management costs by up to 19% per farm. Feed industry representatives experienced a 20 percentage point increase in research-based knowledge of horse nutrition and feeding management. In two research projects, horses on trials were also implanted with micro-chips which permitted for body temperature recording and permanent identification.

Livestock specialists devoted considerable time in education of livestock owners about current and pending recommendations associated with the National Animal Identification System (NAIS). The first two tiers of the NAIS pertain to Premise Identification and Permanent Identification of livestock. More than 250 educational meetings were conducted in 2004/2005. In cooperation with the Texas Animal Health Commission, efforts focused on providing livestock owners with information regarding both national and state initiatives. Efforts in 2005 set the stage for early 2006 contact with over 8,000 livestock owners across Texas. This included power point information, press releases and web-based information on Premises ID. Specialists also served on some of the NAIS Specie Working Groups, to evaluate recommendations being considered for tiers one and two, as well as recommendations for future tracking of livestock movement. One such example is the NAIS Equine Species Working Group, which critically reviewed recommendations that could eventually apply directly to horse owners across the state.

Knowing that federal regulations could require some species of livestock to have radio frequency identification (RFID) tags, Dairy Records Management Systems has developed procedures for using wireless wand, Bluetooth and hand-held computer technologies. The purpose is to integrate collected data into the on-farm herd management system. Dairy specialists reported work with ten (10) herds of 7,000 cows where 100% accuracy of identification was attained, with a 70 % reduction in the amount of time required to identify dairy cows.

The Horse Theft Awareness and Prevention Initiative, created via 1997 legislation related to Horse Theft Protection, continued in 2005. Education via 90 programs/demonstrations/exhibits at 44 different county locations, reached 14,219 horse owners in 2005. In the past eight (8) years, 59,774 people in Texas have accessed the information via 747 programs/educational exhibits. Twelve (12) Law Enforcement Officer Schools have educated 546 officers from 138 different counties. Collaborators have been the TSCRA and the Sheriff's Association of Texas.

Dairy specialists continued to define management practices beneficial to the reduction of Johne's Disease in large herds. Emphasis continued on measuring the impact of this disease on productivity. A cohort study in 2005, although still in progress, has been investigating lifetime milk production, and from data already collected, there is a nearly 10,000 pound reduction in lifetime milk production. From the herd that initiated control measures back in 2001, the incidence of ELLISA-positive home raised animals has decreased from some 12 % to 2 %. This was attributed to adoption of a two key management practices. Research also included four (4) beef herds in a demonstration project, and these efforts in dairy and beef herds have increased participation in the state's voluntary Johne's control program. Voluntary herd enrollment increased from 50 to 80 herds in 2005.

Output Indicators:

Statewide:

The total number of people participating in above mentioned Goal 3 educational programs to improve the production efficiency and end product quality of livestock and livestock products was 20,325.

South Texas Example: Meetings: CEAs reported 93 drought-related meetings. News Articles: 187 total with 415,000 one-time readership. Phone calls related to drought: 7,000.

Publications in 2005 Reflecting Integrated TCE/TAES Collaboration:

- TCE Numbered Publications – 4 (B-6161, B-5033, B-5025, B-5043)
- Scientific Society Publications – 7
- Refereed Journal Publications – 4 in J. Dairy Science: 1 in J. Animal Science (accepted with revisions): 1 in Prof. Animal. Science: several others submitted in 2005 and in process.

Outcome Indicators:

- Decreased management costs: 76 % of respondents reported savings expectations of up to 19 % per year. (Savings related to fewer sick animals, improved health care practices and more correct selection of feedstuffs and proper feeding levels for feeding livestock)
- Increased confidence in decision-making: 90 % of respondents
- Decreased time required in routine management: 82 % of respondents (savings of 5 minutes up to two hours daily, depending on size of the livestock operation. 70 % reduction in time required to identify some species of livestock).
- Adopt a research-based practice: 80 % of respondents
- Stop using a non-productive practice: 55 % to 70 % of respondents, depending on specie.
- Utilize permanent identification (branding or microchip): 17 % to 35 % of respondents
- Increase in research-based subject matter knowledge: Average increase of 20 percentage points (48 % improvement).

C. Sources of Federal Funds

TCE: Smith Lever and State Matching
TAES: Hatch, and state, federal and private contracts and grants

D. Scope of Impact

Multi-State Extension * OK, AR, LA, TN, FL, and NM
Multi-State Research * Multi-State Project NRSP-8 (IL)

Integrated Research and Extension: Extension faculty worked with research scientists to

- Identify technologies that could enhance production efficiencies, improve data collection and optimize meat quality.
- Further adapt electronics to livestock production and management. Electronic individual ear tags were used in Ranch to Rail to facilitate computer-assisted data collection. Also, ultrasound technology developed by researchers was used to determine body composition as it relates to carcass quality. Research faculty updated producers in Beef 706 on how electrical stimulation of carcasses and controlled aging can be used to improve tenderness of retail cuts. Horse research included us of the new bio-thermal chip for implantation to monitor body temperature.
- Further refine factors that influence mineral and protein quality needs of horses, as well as dietary fat sources for exercising animals with emphasis on bone response and inflammation, and effects of exercise on embryo recovery rates and embryo quality.

Goal 2: A safe and secure food and fiber system

Overview

The Centers for Disease Control and Prevention estimate that food borne diseases cause 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths each year. More vulnerable populations for food borne diseases include the very young, the elderly, pregnant women, individuals with selected chronic diseases, and those who are immuno-compromised. Medical costs and productivity losses associated with food borne diseases are estimated in the billions of dollars each year; in Texas, the costs are in the millions of dollars annually.

It is estimated that more than half of all food borne illnesses are attributed to improper food handling in restaurants. Because 43-50% of all food dollars are spent on food prepared outside the home, food safety is a top concern among consumers. Therefore, food safety education is critical to help reduce the risk for food borne diseases.

To meet the need for quality food safety education in Texas, programs on safe food handling and food borne diseases were conducted by county Extension agents using materials developed by Texas Cooperative Extension. *Food Safety: It's Our Business* was targeted towards managers of food service establishments.

Programs in the areas under Goal 2 continue to develop and provide research-based information to commercial food handlers, food service and child nutrition directors in public schools, the medical community, corporate food companies, as well as lay citizens in the state. Educational programs are designed in order for participants to make sound decision on the implementation of best management practices and adoption of recommended food safety practices. Educational programming has been and will continue to be driven by the needs of our clientele. Results from the Texas Community Futures Forum, and guidance from Executive Program Councils and program committees, and representatives from major medical and industry groups serve as the basis for this strategy.

The TCE/TEAS data presented in this summary and the following section represents the efforts of 2005. Research and educational programming efforts have been ongoing for many of the areas represented and continue to provide Texas food service managers, food service handlers, processors, and other industries with opportunities for increased food safety knowledge and skills. Future plans will build on past experiences and emerging issues that may affect our state and clientele.

Sources of TCE-TAES Funding and FTEs

TCE: Smith Lever and State Matching

		$ X 1000 Actual FY 2005
Program 4 – Food Protection Management		722
	FTEs	31.71
Allocated Resources Goal 2		**1,029**
	FTEs	**47.14**

TAES: Hatch, and state, federal and private contracts and grants

Source of Funding and FTEs

Federal Funds ($ x 1000):	298
State Funds ($ x 1000):	424
FTEs:	6.06
Number of Projects:	45
Number of Publications:	84

State TCE-TAES Plan of Work Program 4: Food Protection Management
Key Theme: Food Handling, Food Safety, and Food borne Illness

A. Description of Activity

The Centers for Disease Control and Prevention (CDC) estimate that foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations and 5,000 deaths each year. Populations most vulnerable to foodborne disease include pregnant women, the elderly, the very young, and those individuals with weakened immune systems.

These foodborne diseases are linked to various bacterial, viral, and parasitic pathogens. According to information from the Centers for Disease Control and Prevention, over two hundred and fifty different types of foodborne diseases have been described. Common symptoms of foodborne disease include nausea, vomiting, diarrhea, abdominal cramping, fever, and headache. These symptoms are dependent on the microbe ingested.

In the year 2000, the United States Department of Agriculture Economic Research Service estimated that the medical, productivity loss, and premature death costs related to five foodborne pathogens totaled $6.9 billion dollars annually. The specific foodborne pathogens used in this estimation included *Campylobacter, Salmonella, E. coli* O157, *E. coli* non-O157 STEC, and *Listeria monocytogenes*.

More than half of all foodborne illnesses is attributed to improper food handling in restaurants. Because 43-50% of all food dollars are spent on food prepared outside the home, food safety is a top concern among consumers. Therefore, food safety education is critical to help reduce the risk for foodborne illness.

The Food Protection Management (FPM) program was utilized to meet the need for quality food safety education in Texas retail food establishments. Using the curriculum *Food Safety: It's Our Business* FPM programs on safe food handling and foodborne diseases were conducted by county Extension agents to food service owners, managers, cooks and supervisors. The FPM program is accredited by the Texas Department of State Health Services as a Certified Food Manager Program. Individuals who complete this course are prepared to sit for the state exam to become a Certified Food Manager. The program emphasizes the knowledge and behaviors that are critical for the prevention of foodborne diseases:

- Enhanced use of temperature control measures in food service, such as thermometer use, time and temperature control, safe internal cooking and holding temperatures, thawing procedures and general storage temperatures.
- Increased adoption of proper hygiene and hand washing practices of food service employees and managers.
- Increased adoption of practices to avoid cross-contamination such as proper storage, washing and sanitizing of utensils and equipment between use, and employee hygiene practices.
- Improved knowledge and practices in purchasing and accepting safe food.

Target Audience for Food Protection Management Program.

The target audiences for this educational program were primarily food managers and employees in food service institutions, companies, and small privately owned foodservice

businesses who needed or desired training. These contacts included those in both urban and in the under-served rural areas of the state where public health oversight is limited.

Linkages.

Linkages included the following: private sector partnerships, corporate industries such as fast food chains and bed and breakfasts, and food distributors. Interagency cooperators included the Texas Department of State Health Services, local public health jurisdictions and trade organizations such as restaurant and convenience store associations.

B. Impact of Program

Output Indicators:

During 2005 year, more than 1200 food service employees in participated in *Food Safety: It's Our Business* trainings through local Texas Cooperative Extension offices. Of those participants who provided demographic information (n=1102), 54% were Caucasian, 26% were Hispanic, and 7% were Black. Less than 2% of the respondents were Asian. A majority of the participants (80%) identified English as their preferred language while Spanish was the preferred language identified by the remaining participants (20%). Age of participants varied greatly; 11% reported their age between 18 and 24 years, 21% were between 25 and 34 years, 27% of the participants were between 35 and 44 years, and 24% were between 45 and 54 years of age. Nearly 17% of the individuals were age 55 or older.

Outcome Indicators:

Program participants (n=710) who completed either a one-day or two-day course between the months of January and July 2005 were invited to participate in a retrospective post evaluation to determine the extent that food safety behaviors were being adopted in their workplace**.** The instrument utilized to evaluate the program focused on the extent to which they practiced selected food safety behaviors, both before and after completing the program. Participants self-reported the frequency they practiced these behaviors (3 = always; 2=sometimes; 1=never) before and after attending FPM. A paired comparison t-test – measuring the difference between the before and after mean (of a "frequency of behavior" scale) – was used to test for statistical significance (program impact). The significance level was set at 0.05.

Questions about number of meals served, numbers of hours of food safety training provided to employees in their food service establishment along with selected demographic questions were included in the survey. Of the 710 participants surveyed, 207 (29%) were returned. One hundred eight-nine (189) of those surveys (26.6%) were complete enough to be utilized for data analysis.

Respondent Characteristics

Characteristics of the 189 survey respondents are shown in Table 1. Of the 189 surveys returned, 16 (8.5%) were completed using the Spanish language instrument. A majority of the FPM program participants were female and white although other ethnic groups were represented. Participants generally were classified into one of three age ranges; 30 to 39 years, 40 to 49 years, or 50 to 69 years. Job title of the participants also varied, with nearly 29% of respondents identifying themselves as the manager of their food service establishment. Participants reported being employed in the food service industry for an average of 10.9 years (range less than one

year to 40 years). On average, the food service establishments where the participants were employed served 242 customers a day and employed 11 full- and/or part-time workers.

Table 1. Subject Characteristics

	N	%
Gender		
Male	37	19.6
Female	148	78.3
No response	4	2.1
Age		
Under 30 years	16	8.5
30 to 39 years	40	21.2
40 to 49 years	61	32.3
50 to 59 years	45	23.8
60 years and older	23	12.2
No response	4	2.1
Ethnicity		
African American	12	6.3
Hispanic	50	26.5
White	116	61.4
Other	2	1.1
No response	9	4.8
Job title		
Assistant manger	13	6.9
Cook	40	21.2
Dietary services director	4	2.1
Manager	54	28.6
Owner	40	21.2
Supervisor	18	9.5
No response	20	10.6

The extent to which selected food safety behaviors were being followed before and after the FPM program is shown in Table 2. Compared to before FPM, survey respondents reported significant behavioral changes after participating in the program.

Table 2. Extent to which food safety behaviors were practiced pre-FPM vs. post-FPM, for all participants

Behavior	Mean score (pre)*	Mean score (post)*	Significance (P-value)
Frequency of maintaining food temperatures at 41 degrees or below	2.69	2.96	.000
Frequency of measuring internal temperature of hot/cold foods being held at least every 2 hours	2.18	2.82	.000
Frequency of date marking all ready-to-eat refrigerated potentially hazardous foods	2.50	2.93	.000
Frequency of using a thermometer to determine the doneness of food	2.29	2.78	.000
Frequency of using the 2-stage cooling method to cool foods to 41 degrees or below	2.16	2.80	.000
Frequency of washing hands for 20 seconds using soap and hot water	2.67	2.96	.000
Frequency of showing employees proper hand washing techniques	2.38	2.86	.000
Frequency of cleaning and sanitizing cutting boards between uses	2.73	2.96	.000
Frequency of cleaning equipment, utensils and food contact surfaces used for preparing potentially hazardous foods every 4 hours	2.63	2.92	.000
Frequency of cleaning and sanitizing all clean-in-place equipment every day	2.68	2.91	.000
Frequency of storing raw foods below ready-to-eat foods in the refrigerator	2.60	2.90	.000
Frequency of maintaining proper pest, insect, and rodent controls as specified by HACCP law and code	2.79	2.98	.000
Frequency of minimizing the presence of pests through routine inspections and control measures	2.80	2.96	.000

* Likert scale defined as 1=Never, 2=Sometimes, 3=Always

In addition to the noted changes in behavior, more than 86% of the respondents received a passing score on the Texas Department of State Health Services Certified Food Manager exam. Respondents also reported that the amount of time they spent training employees about food safety rose from 5.6 hours before participating in FPM to 9.4 hours afterwards (P = .0001). Another interesting finding was that 81.3% (n=148) of the respondents identified FPM as their first Extension program ever attended.

Results of this evaluation suggest that the Food Protection Management program is effective in promoting the adoption of specific food safety behaviors that are critical to preventing food borne disease outbreaks in retail/commercial food establishments. This is evident by the extent to which behaviors were being practiced after FPM compared to before. The finding that a majority of the surveyed participants passed the DSHS Certified Food Manager illustrates that the program is effective in successfully preparing employees for the state exam. Finally, results indicate that this program allows Texas Cooperative Extension to deliver quality programs to new audiences who otherwise might not have the opportunity to participate in Extension programs.

The National Center for Electron Beam Food Research at TAMU

The primary objective of the National Center is to provide E-beam and X-ray irradiation facilities for academic and industry researchers from around the United States and overseas. We have conducted projects for a number of academic researchers including University of Florida, Mississippi State University and Texas A&M University. These projects ranged from studying X-ray inactivation of seafood pathogens to the formation of "electron channels or trees" for nanotechnology applications. Studies from TAMU researchers have focused on the use of E-beam technologies for decontamination of cantaloupes, for the sterilization of space-craft components, and for phytosanitary applications. In addition to foods, we are continuously exploring new opportunities for E-beam irradiation such as in wastewater decontamination, municipal biosolids disinfection, and mutation breeding for high-value ornamentals.

In addition to supporting research activities through the use of E-beam time and technical support for dosimetry and microbiology, the National Center has been involved in the graduate and undergraduate education. A graduate level course in the "Microbiology of Food Irradiation" has been supported by the National Center. Additionally, a number of short courses targeted at high school teachers, consumers and food service industry has been sponsored by TCE at the National Center. In collaboration with the IAEA, the National Center has hosted the exchange of international scientists who have been interested in food irradiation. We are finalizing a MoU with the key food irradiation agency of India (Bhaba Atomic Research Center in Mumbai) to provide for the exchange of scientists and training opportunities at the National Center.

We have continuously worked with the private industry to facilitate the availability of microbiologically safe foods in the U.S. We have worked with both the suppliers of ground beef as well as the suppliers of irradiation equipment. We are working with the private industry in the validation of E-beam processes around the world.

C. Source of Federal Funds

TCE: Smith-Lever and State Matching
TAES: Hatch, and state, federal and private contracts and grants, USDA-CSREES IFAFS Grant # 00-52102-9637

D. Scope of Impact

Multi-State Extension - Multi-State projects include working with Colorado, Ohio and Washington to develop program indicators and working with South Carolina, North

Carolina, Florida, Georgia and California to prioritize and diffuse post harvest fruit and vegetable safety technologies.
Collaboration with USDA-FAS, USDA-APHIS and California Farm Bureau Federation in a “Framework of Equivalency” discussion and symposium on phytosanitary uses of irradiation for produce.
Collaboration with the International Atomic Energy Agency- to provide technical training on phytosanitary and sanitary uses of food irradiation technology.
Multi-national Research and Development – Southeast Asia Food Science and Technology Center Project with Indonesia.
Multi-State Research – Multi-State Project W-195
Integrated Research and Extension: Integrated Research and Extension include working closely with professors in the Department of Food science and Technology, Animal Science, and the Department of Food Science and Engineering on projects such as the food safety, HACCP, genetically modified foods, and programs for delivering a safe reliable food supply continue the focus of this highly integrated program.

Goal 3: A Healthy, well-nourished population

Overview

The TCE-TAES Programs under Federal Goal Three cover the areas of General Health Education, Diabetes Education, and Better Living For Texans.

General Health Education. General health research and education programs are represented by the Walk Across Texas, the Passenger Safety Project, the Cancer Risk Reduction for Rural Texans Project, and efforts of the Vegetable and Fruit Improvement Center. These programs, with the exception of the Passenger Safety Project, are designed to promote the prevention chronic diseases or to reduce the impact of chronic diseases such as heart disease, stroke, cancer, and diabetes. Prevention and reducing impact of these very costly chronic diseases is extremely significant since 70% of deaths and 75% of health care costs in the U.S. are due to chronic diseases. The Passenger Safety project is designed to provide a safe environment for children and adults using our roadways.

Walk Across Texas. According to the Task Force on Preventive Health Services, 29% of American adults are not physically active at all, and 50% are not active enough to achieve health benefits. Only 27% of students in grades 9 to 12 engage in the recommended amounts of moderate-intensity physical activity. Daily participation in high school physical education classes dropped from 42% in 1991 to 32% in 2001. Adequate physical activity lowers risk and improves management and outcomes for leading causes of death including heart disease, hypertension, stroke, and diabetes. Walk Across Texas is a physical activity program aimed at helping participants establish the habit of physical activity with support from their peers. County Extension agents in 64 counties across Texas organized teams of eight people and school classes to keep a record of miles they walked during eight weeks. Teams and school classes competed with one another to walk across the state first and/or accumulate the most mileage during the eight weeks. Team members could also attend classes and receive information on nutrition, exercise, weight loss, and other health topics like arthritis and diabetes.

Passenger Safety. National Safe Kids reports in 2004 that approximately 82% of child safety seats are not installed or used correctly. The long term goal is to reduce death and injuries by 25% for children ages 4 to 8 years old by 2006. Motor vehicle crashes are the leading cause of death for children.

Cancer Education. Cancer is the second leading cause of death in adults over 40 years of age. Survival is improved when early detection is sought. The risk for cancer can be reduced with lifestyle improvements such as not using tobacco, reducing unprotected sun exposure, maintaining a normal weight, and being physically active. Cancer deaths can be reduced by early detection and receiving appropriate medical care. Rural populations in Texas are more at risk for death from cancer because 30% are over 65 years old and accessing early detection services and knowledge about the need for early detection, as well as medical care are difficult. This project particularly targets people working in agriculture--a group with a high incidence of skin cancer because of high levels of sun exposure as they go about their daily work. Extension agents were provided training and educational resources focused on early detection and risk reduction for cancer. Agents used these materials at a variety of events including fairs, livestock shows, Texas Extension Educators Association meetings, civic club meetings, 4-H meetings and events, camps, and many other events in their counties. Volunteers were trained to use flip charts containing narratives and pictures to inform community groups how to prevent skin cancer and seek proper screening and medical care.

Lifestyles and eating habits have resulted in a major increase in the incidence of diet-related diseases. This has serious implications for the individual, family and the overall economy. There is an increasing focus on preventing diseases through diet rather than curing diseases with drugs and surgery. TAES and TCE have an integrated program designed to have maximum impact across Texas and the nation. A component of the overall approach includes the Vegetable and Fruit Improvement Center (VFIC), a research and extension concentrated effort to address diet and health. This center working with scientists from the state's top medical centers, have devised and implemented a research and education plan that will not only make fruits and vegetables more healthful for people to eat but also economically strengthen the total produce industry. The VFIC is organized with industry partners which fund a part of the research and graduate assistantships. There are 42 partners located in eight states, the U.S., Germany, and the United Kingdom. The membership represents seed companies, grocery stores, restaurants, grower/shippers, national associations, nutraceutical companies, processors, and individuals.

Diabetes Education. Diabetes is a significant problem affecting 1.3 million (8.1%) of adult Texans diagnosed (Texas Behavioral Risk Factor Surveillance System, 2003) and another 343,000 adult Texans (NHANES age-adjusted prevalence estimate of 2.4) not yet diagnosed. While the number of children in Texas having diabetes is unknown, it is believed that between 8 to 45 percent of newly diagnosed cases in children is type 2 with most overweight or obese. Failure to control blood glucose levels to prevent long term complications results in increased health care costs, increased loss of time from work due to illness, amputations, poor health status leading to decreased quality of life. Extension diabetes programming efforts educated clientele in some 1,436 programs with 51,135 group contacts and 70,477 individual contacts with near 46 percent participants representative of under served populations. In the 2004 to 2005, some 134 trained Extension agents in Family and Consumer Sciences provided the leadership role in building the health coalitions in their Texas county diabetes programs. Some 1,514 volunteers were trained to lead both the diabetes educational 12-part lesson series and 4-part cooking school. These volunteers made 9,965 individual contacts and reached 7,279 diabetic individuals in group settings. With more collaborations, coalitions, and partnerships within the medical communities in local counties, Extension has gained respect in their leadership role of the health coalition as a reliable resource for nutrition and self care.

Better Living for Texans. An estimated 17% of Texans live in poverty. Research suggests that individuals who live in poverty consume diets that are not in agreement with the Dietary Guidelines for Americans or the recommended food guidance (MyPyramid). In addition, diets of individuals residing in low-income households are often deficient in fruits, vegetables, and dairy products. This is due to a number of factors including a lack of knowledge and an inability to purchase and prepare nutritious foods on limited budgets. Individuals who live in poverty are also at risk for being food insecure, meaning that the ability to acquire safe and nutritious foods is limited or uncertain. In 2005, the USDA reported that, on average, more than 16% of Texas households had experienced food insecurity between 2002 and 2004. This is higher than the 11.4% reported nationally. A 2002 survey of 1,000 households participating in the Food Stamp Program throughout Texas found that more than half of those households had experienced food insecurity or hunger within a 12-month period.

Programs in the areas under Goal 3 continue to provide citizens of Texas with research-based information in order for them to make sound decision on the implementation of best management practices, adoption of technologies, and behavior changes to improve the quality of

life. Educational programming has been and will continue to be driven by the needs of our clientele. Results from the Texas Community Futures Forum, and guidance from Executive Program Councils and program committees serve as the basis for this strategy. The data presented in this summary and the following section represents the efforts of Year 05 of this Plan of Work. Educational programming efforts have been ongoing for many of the areas represented and continue to provide Texans with opportunities for increased health and well-being. Future plans will build on past experiences and emerging issues that may affect our state and clientele.

Sources of TCE-TAES Funding and FTEs

TCE Funding: Smith Lever and State Matching

		$ X 1000 Actual FY 2005
Program 5 – General Health Education		1,047
	FTEs	29.76
Program 6 – Extension Diabetes Education		551
	FTEs	24.40
Program 7 – Better Living for Texans		515
	FTEs	22.64
Total TCE Allocated Resources Goal 3		**2,195**
	FTEs	**87.98**

TAES Funding: Hatch, and state, federal and private contracts and grants

Source of Funding and FTEs

Federal Funds ($ x 1000):	197
State Funds ($ x 1000):	613
FTEs:	8.53
Number of Projects:	34
Number of Publications:	110

State TCE-TAES Plan of Work Program 5: General Health Education
Key Theme: Human Health

A. Description of Activity

Walk Across Texas. According to the Task Force on Preventive Health Services, 29% of American adults are not physically active at all, and 50% are not active enough to achieve health benefits. Only 27% of students in grades 9 to 12 engage in the recommended amounts of moderate-intensity physical activity. Daily participation in high school physical education classes dropped from 42% in 1991 to 32% in 2001. Adequate physical activity lowers risk and improves management and outcomes for leading causes of death including heart disease, hypertension, stroke, and diabetes. This program is aimed at helping participants establish the habit of physical activity with support from their peers.

Walk Across Texas is a physical activity program aimed at helping participants establish the habit of physical activity with support from their peers. County Extension agents in 64 counties across Texas organized teams of eight people and school classes to keep a record of miles they walked during eight weeks. Teams and school classes competed with one another to walk across the state first and/or accumulate the most mileage during the eight weeks. To encourage school participation, over 50 activities, consistent with the Texas Essential Knowledge and Skills, were developed and made available on-line. Team member participants could also attend classes and receive information on nutrition, exercise, weight loss, and other health topics like arthritis and diabetes.

Participants access program materials and track their progress on-line at http://walkacrosstexas.tamu.edu, a data collection web site developed during 2002. They are able to immediately receive feedback on their progress towards increasing their physical activity. Participants may see how their individual or team progress compares to others in their groups. Participants compete within groups such as their own work sites or schools, thereby enhancing peer support for accomplishing their goal of increased activity. The website has enabled the implementation of this program in major metropolitan areas, including Dallas and Ft. Worth.

Internal linkages have been formed with Agricultural Communications, Foods and Nutrition, and Extension Information Technology. External linkages include families, schools, work sites, families, neighborhoods, churches, and civic clubs participated. Almost one-half of the teams continue to come from work sites. County agents reported collaborating with local health departments and a number of other agencies like parks and recreation and senior centers. Other states including Tennessee, Idaho, Kansas, Arkansas, Louisiana, Kentucky, Alabama, Florida and Illinois have requested the manual to adapt this program for their states.

Passenger Safety Education. National Safe Kids reports in 2004 that approximately 82% of child safety seats are not installed or used correctly. The long term goal is to reduce death and injuries by 25% for children ages 4 to 8 years old by 2006.

Certified child safety seat technicians provided child safety seat checkup events where parents learned how to correctly select and install safety restraint systems for their children. Technicians demonstrated the correct installation in parents' vehicles in rural counties across Texas.

Collaborations are with other agencies, both in-state and out-of-state. Included in collaborations are the following agencies: Texas Department of Transportation (TX-DOT); National Highway Traffic Safety Administration (NHTSA Region 6); Texas Department of State

Health Services (TDSHS); Texas Department of Public Safety (DPS); Texas Transportation Institute (TTI); Texas Municipal Police Association (TMPA); Regional Advisory Councils (RAC); Local and Statewide Law Enforcement; Local and Statewide Fire Departments; Local and Statewide EMS Professionals; Statewide Health Professionals; and State Farm Insurance Company. The project distributed 80,514 educational resources to support occupant protection. The project's two Rollover Convincers were viewed by over 19,874 participants.

Cancer Risk Reduction for Rural Texans. Cancer is the second leading cause of death in adults over 40 years of age. Survival is improved when early detection is sought. The risk for cancer can be reduced with lifestyle improvements such as not using tobacco, reducing unprotected sun exposure, maintaining a normal weight, and being physically active. Rural populations in Texas are more at risk for death from cancer because 30% are over 65 years old and accessing early detection services and knowledge about the need for early detection, as well as medical care are difficult. This project particularly targets people working in agriculture--a group with a high incidence of skin cancer because of high levels of sun exposure as they go about their daily work.

With funding from the Texas Cancer Council, Extension agents were provided training and educational resources focused on early detection and risk reduction for cancer. Agents used these materials at a variety of events including fairs, livestock shows, Texas Extension Educators Association meetings, civic club meetings, 4-H meetings and events, camps, and many other events in their counties. Volunteers were trained to use PowerPoint presentations and/or flip charts containing narratives and pictures to inform community groups how to prevent skin cancer and seek proper screening and medical care. Rural youth participated in Health Tech camp where they received training about cancer prevention strategies and then helped create peer relevant web sites: http://coolshade.tamu.edu , http://dontdip.tamu.edu , and http://nobutts.tamu.edu . A group of 11 Extension agents participated in developing a new program, Hallelujah to Health, to improve early detection of cancer by African American women in East Texas.

According to the Centers for Disease Control, there is a lack of programs to reduce youth tobacco use in rural communities. To address this issue, funding was also obtained from the Texas Cancer Council to develop a community focused process to reduce tobacco use in rural communities. The program, Students Winning Against Tobacco (S.W.A.T.), is now being implemented in 6 Panhandle counties with double the national rate of tobacco use (22% vs. 43%) by high school students. The comprehensive community approach includes a community advisory group in each of the counties, a peer education team in each county (trained in a summer leadership camp), community assessment, and implementation of the nationally recognized Towards No Tobacco curriculum in schools. In addition, Harrington Cancer Center and the American Cancer Society are providing cessation information and services in these counties.

Internal collaborations include the 4-H program and Agricultural Communications. External linkages have been formed with the Texas Cancer Council, and a variety of others including M.D. Anderson Cancer Center in Houston, American Cancer Society, Harrington Cancer Center in Amarillo, the Texas Comprehensive Cancer Coalition, a variety of local hospitals and clinics, civic clubs, fair and livestock show boards, other Texas Cancer Council funded projects like the Stop Spit Tobacco Network, work sites, churches, and many others.

B. Impact of Programs

Walk Across Texas. Initiated in 1996, over 95,000 Texans have participated and significantly increased their physical activity level. In 2005, 22,452 people, including 11,389 school children, participated in Walk Across Texas. Participant mileage increased from 16.9 miles in week one to 19.2 miles in week eight. Participants could potentially save $117, 922,132 in future health care costs if they continue walking as they had during Walk Across Texas. Consistently, 50% of the participants report a side benefit of feeling less stress. Example participant "success stories" are:

> "I feel so much better physically; my mood has become more upbeat, and I have a lot more energy to keep leading this active lifestyle. I now make exercise a priority on a daily basis and have stopped making excuses. Thanks, Walk Across Texas! This program, along with my ongoing commitment, has saved my life!" (*Walk Across Texas* participant)

> "The good news is.....after diligently walking and jogging for the past 8 weeks as well as watching my food intake...as of today I have lost 8 and a half pounds for a total loss so far of 16 ½ pounds!!!! I am so excited and motivated to continue to reach my total goal of 25 pounds lost. Even better, my annual wellness exam 2 weeks ago results showed my cholesterol "normal" for the first time in 3 years and my blood pressure was the lowest that I can ever recall and very normal!" (*Walk Across Texas* participant, Dallas County)

Passenger Safety. Every $42 child safety seat in Texas generates $1,800 in benefits to society. These benefits break down as follows: $140 in medical costs, $430 in work loss and other resource costs and $1,200 in quality of life costs. In 2005, Passenger Safety made sure that 1,100 children were correctly restrained. This represents at total of $1,980,000 in possible healthcare cost savings. In 2004, an estimated 451 children under the age of 5 were saved as a result of child restraint use. If all child passengers ages 14 and under were restrained properly, an estimated 182,000 serious injuries could be prevented annually. From 1975-2004, an estimated 7,472 lives were saved by child restraints

Data from the Passenger Safety project indicates that over 1,100 child safety seats were inspected and parents were instructed how to correctly install their child safety seats. 783 new child safety seats were distributed by project members and project trained agent/technicians. 19,874 Texans attended events where they viewed the two Rollover Convincers to increase their awareness of the importance of using safety belts consistently. The project distributed 80,514 educational resources to support occupant protection.

Cancer Risk Reduction for Rural Texans also had an impact on its participants. A total of 72,178 people were directly served by this project. Participants attending awareness activities have said they were going to have suspicious lesions checked and others have said they will begin using sunscreen and protective clothing as well as avoiding tanning beds. Women participating in sessions focused on early detection of breast cancer report they intend to seek regular mammograms. Youth attending Health Tech camp go back to their communities and serve as peer educators, conducting tobacco and skin cancer prevention activities. A number of the youth attending Health Tech have expressed an interest in pursuing a health career so they can return to their rural communities as health professionals. Mini-grants to agents have been used to deliver a variety of programs aimed at reducing the incidence of skin cancer, tobacco use, and breast cancer. These mini-grant supported programs enabled agents to provide cancer prevention activities at summer camps and at a number of civic groups.

Output Indicators:

Walk Across Texas

Number of people completing non-formal education programs on health promotion. 22,452 participants.

Rural Passenger Safety Education

Number of people completing non-formal education programs on health promotion. 30,817 participants.

Cancer Risk Reduction for Rural Texans

Number of people completing non-formal education programs on health promotion. 72,178 participants.

Outcome Indicators:

Walk Across Texas

The total number of people completing non-formal education programs on health promotion who actually adopt one or more recommended practices within six months after completing one or more of these programs. 22,452 people, including 11,389 school children participated in Walk Across Texas. Participant mileage increased from 16.9 miles in week one to 19.2 miles in week eight. This was a statistically significant increase.

Vegetable and Fruit Improvement Center's Foods for Health Program

A. Description of Activity

The Vegetable and Fruit Improvement Center (VFIC) is an interdisciplinary Research and Education Center within the Texas Agricultural Experiment Station. The Center members consist of several TAMU departments, Texas Agricultural Experiment Stations and Colleges as well as top medical schools in the state and nation including Baylor College of Medicine, USDA-Children Nutrition Center and Baylor College of Dentistry, and New Jersey School of Medicine and University of Houston at Victoria. Since 1996, VFIC has been focused on a vital research task of **"Foods for Health"**. The Center concept is based on interdisciplinary scientists and industry working in partnership with a goal to develop quality fruit and vegetable products with enhanced health and nutritional benefits in an efficient, economical and environmentally sound system.

The goal of the VFIC is to provide solutions, through the development of new technologies and plant materials, for producing quality vegetable and fruit products. The VFIC enables science and industry to promote research that solves existing problems while also offering the opportunity to explore new ideas, such as designing true "health foods." The potential for vegetable and fruit improvement is greatly enhanced by bringing together plant breeders, plant protection specialists, biotechnologists, food technologists and medical researchers to work as teams. The total scope of the VFIC work includes improvement in genetics, pre- and post-harvest effects on bioactive compounds, production efficiency, post-harvest handling and processing, isolation and characterization of bioactive compounds,

marketing, education, and related areas that allow the Texas fruit and vegetable industry to remain competitive in the national and international marketplace.

Lifestyles and eating habits have resulted in a major increase in the incidence of diet-related diseases. This has serious implications for the individual, family and the overall economy. As health care costs have been escalating, increasing focus on prevention rather than cure through diet and increasing consumption of fruits, vegetables and nuts have been the major focus of the Vegetable and Fruit Improvement Center (VFIC). TAES and TCE have an integrated program designed to have maximum impact across Texas and the nation. A component of the overall approach includes the VFIC, a research and extension concentrated effort to address diet and health. This center working with scientists from the state and nation's top medical centers, have devised and implemented a research and education plan that will not only make fruits and vegetables more healthful for people to eat but also economically strengthen the total produce industry. The VFIC, partnering with industry, funds a part of the research and graduate assistantships. There are 42 partners located in eight states, the U.S., Germany, and the United Kingdom. The membership represents seed companies, grocery stores, restaurants, grower/shippers, national associations, nutraceutical companies and processors, as well as individuals act as friends of the center.

Vegetables, fruits and nuts are a necessity for good nutrition and health, a flavorful part of our diets and an important impact on the economy. The VFIC research and educational program focuses on naturally occurring bioactive compounds found in carrots, citrus, melons, onions, peaches, peppers, plums, artichoke, pecan and watermelon.

The VFIC conducts research and Extension in four major areas: 1) health promoting bioactive compounds through *in vivo* and *in vitro* studies; 2) post harvest handling and processing–develop techniques for optimizing healthful compounds in fruits and vegetables; 3) production–develop more efficient production techniques that reduce the need for inputs such as water and farm chemicals while producing optimum bioactive compounds; 4) breeding and genetics–optimize levels of naturally-occurring bioactive compounds that help prevent human diseases.

B. Impact of Programs

The phytochemicals course impacted a large number of students located in different parts of Texas. In addition, the course was expanded to Ohio State University and Michigan State University with 64 students impacted by this course in the U.S. The VFIC impacted several graduate, undergraduate students by providing hands-on training and formal education in Foods for health. The VFIC Kids program provided training to approximately 523 elementary school children in relation to eating healthy eating and benefits of fruits, vegetables and nuts. Ten schools in Bryan/College Station area benefited from this program. In 2005, VFIC hosted 19 scientists around the world, 8 industry and 2 legislature tours which helped three new industry members join the Center and legislatures continued their support due to our excellent research and educational program. VFIC scientists presented their research findings in several international, national, state, regional professional and industry meetings. Industry presentations impact the commodity groups and consumers in their decision to change lifestyle. VFIC director has chaired and/or co-chaired four major national/international conferences related to Foods for health and president/chair elect for three professional organizations.

The VFIC research programs are actively working to accomplish the 'Foods for Health' research goals including several patents. The overall accomplishments are possible by the dedicated work of the graduate students, supporting staff and faculty members.

Licenses/Patents

- 'TAM Mild Jalapeno' was released for its good jalapeno flavor and resistance to multiple viruses that plague growers. This variety will reduce the use of farm chemicals.
- The TAM Mild Habanero is a new, high-yielding, low-pungency pepper variety with enhanced levels of beta-carotene. It contains a mere 150 ppm total capsaicin compared to more than 12,500 in the typical Habanero. It is intended for both fresh market and processing applications where Habanero flavor but not extremely high heat is required.
- 'BetaSweet'™ maroon carrot developed through traditional plant breeding techniques. This carrot has 40% more beta-carotene (a health-promoting compound) and higher sugar content to improve overall flavor. Plant Variety Protection (PVP) was awarded to this carrot in 2001. This carrot is now being sold commercially throughout the world and receives increased interest from health conscious consumers for its good source of carotene and anthocyanins. The 'BetaSweet' carrot has been highlighted in a variety of articles in publications such as the *Washington Post* and *New York Times*. The carrot has expanded to be a "value added" health food for its use as a whole-food additive in juice, ice cream and nutraceutical supplements.
- Tropicpeachone. USPP # 12965.
- TexKing. USPP 14,627.
- TexPrince. USPP 14,629.
- Legend' onion' received PVP in 2001 and licensed to seed companies for use in their hybrids and grown in Texas, Mexico and South America.
- TAMU Disclosure of Invention-Calcium Exchange Expression in Plants
- Patent pending – Rapid isolation of several citrus limonoids

Research Innovations

- The first lab to clone a functional calcium transporter from plants and the first to alter calcium regulation in plants through biotechnology.
- Provided evidence that citrus limonoids and flavonones are potential anticancer agents of colon and oral cancer in animal models.
- Same effects with onion quercetin in animal models for colon cancer.
- Certain citrus limonoids and flavonoids-Potential to reduce cholesterol (animal model)
- Certain structural features in the limonoid nucleus are critical for antineoplastic activity.
- Potential of citrus limonoids in the prevention of child cancer (cell culture studies)
- Increased drought tolerance tomato by generating drought tolerant tomato lines. Metabolic engineering of flavonoids to improve human health: We generated high-quercetin carrot and tomato lines.
- Developed a reliable transformation system on tomato, carrot, potato and lettuce.
- Methanolic extracts of plum and peach had significant inhibitory effect on the cell proliferation of 5 different cancer cell lines

- Peach and plum methanolic extracts and as well as anthocyanins inhibited the methylation of histone and non histone proteins in the nuclei of DS19 mouse.
- Developed a rapid pyruvate testing in onion, a very useful method in onion breeding and serving industry for quality control for flavor.
- Developed first molecular markers to determine onion color in the seedling stage, reducing breeding time from 2 years to one for that trait.
- Enhancing calcium content in the edible portion of vegetables: We have produced high-calcium tomato, potato, carrot lines.

VFIC hosted two major international symposium/Colloquia:

- Role of Horticulture in the interdisciplinary Centers related to Foods for Health- As a part of the American Society for Horticultural Sciences, Los Vegas, NV-July 2005
- International symposium on Human Health Effects of Fruits and Vegetables-VFIC co-chaired this symposium. Quebec City, Quebec, Ca-August 17-20, 2005.

Education is an integral part of the VFIC.

- Graduate students receive guidance and training from the scientists working in the Foods for Health program. The VFIC has provided assistantships for 29 graduate students. They are working world-wide as plant breeders, production managers, educators, and research and development directors in the agriculture industry. Currently there are 8 students receiving assistantship for advanced degrees. These young professionals are very instrumental in the development of new varieties and genetic markers, production methods, and laboratory procedures.
- The Center also hosts an age-appropriate outreach program VICkids (http://vickids.tamu.edu) to promote the health benefits of including fruit and vegetables in their diet and the science to improve the fruits and vegetables they eat. This program has gained acceptance through the public schools with participation totaling over 4,823 children between 1998 and 2005. This program also utilizes the Tran Texas Video Network to reach children outside the local area.
- A 'first of its kind' multidisciplinary course entitled "Phytochemicals in Fruits and Vegetables to Improve Human Health (http://phytochemicals.tamu.edu)" was created and funded through the USDA Challenge Grants and USDA-IFAFS grant. This course is expanded beyond Texas including Ohio State University, Purdue University and Michigan State University. The course was also taught in nine locations in Texas. The sites were Texas A&M University- Kingsville, Texas Agricultural Experiment Station in Weslaco, Texas A&M University College Station, Texas Tech University in Lubbock, Institute of Bioscience and Technology in Houston and Baylor College of Dentistry in Dallas, University of Houston-Victoria. (Total students in all location: 64).

C. Sources of Federal Funds

TCE: Smith-Lever and State Matching
TAES: Hatch, and state, federal and private contracts and grants

D. Scope of Impact

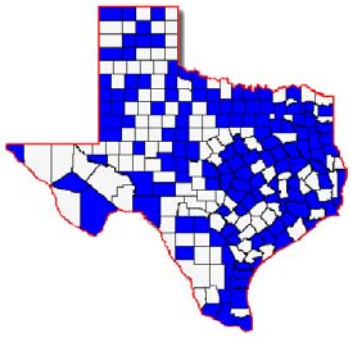
Multi-State Industry Support – CA, MI, MO, OR, TX, VA, WA, WV
International Industry Support – UK, GER
Multi-State Education – TX, MI, IN, OH
Integrated Research and Extension: Research and Extension faculty cooperate to develop program in general health and foods for health.

State TCE-TAES Plan of Work Program 6: Diabetes Education
Key Theme: Human Health, Human Nutrition

A. Description of Activity

Diabetes is a significant problem affecting 1.3 million (8.1%) of adult Texans diagnosed (Texas Behavioral Risk Factor Surveillance System, 2003) and another 343,000 adult Texans (NHANES age-adjusted prevalence estimate of 2.4) not yet diagnosed. Failure to control blood glucose levels to prevent long term complications results in increased health care costs, increased loss of time from work due to illness, amputations, poor health status leading to decreased quality of life. Education is the single most important thing people with diabetes can do to improve their health status and prevent the onset of complications. Additional benefits possible might be that health care insurance costs could decrease by controlled blood glucose levels through proper nutritional management and increased exercise resulting in fewer chronic complications, less time lost from work due to better nutrition practices and self-care health management, and reduction in long term illness and health care costs.

Developed in 2002 and updated yearly are twelve diabetes educational lessons, along with handouts, visuals/transparencies/ PowerPoint presentations, CD- ROMs with PowerPoint presentations, videos (purchased and in film library), and activities included with each lesson. Diabetes curricula *Do Well, Be Well with Diabetes*^{SM} on the following components: **Overview Lesson** is What is Diabetes?**, 6 Nutrition Lessons** include the following: Nutrition–First Step to Diabetes Management; Dietary Treatment of Diabetes; "One Diabetes Diet" - No Longer the Sole Option!; Nutritional Labels; For Good Measure, and Eating Out. **Self Care Lessons** include: Managing Your Blood Sugar; Diabetes and Exercise; Foot Care; Health Checkups; and Medicines for Diabetes. To test the curricula and ensure its credibility in 2001-2002, a pilot test was conducted in 12 Texas Counties to fine tune the curricula. Organizational process included county faculty selected by their supervisors, the administration and the nutrition and health specialists. A diabetes team of specialists, editors, artists, graphics designers, marketing specialists, and administration finalized the curricula. During 2002 to 2005, this process resulted in total of 150 trained agents in Texas counties selected according to their performance and ability to plan, implement and evaluate their programs as shown in the map with blue representing diabetes programming in designated counties.



In addition to the *Do Well, Be Well with Diabetes*^{SM} conducted in 2003 (phase 1), a coalition of county faculty, nutrition and health specialists, administration and other experts planned a 4-lesson cooking school series entitled *Cooking Well with Diabetes*^{SM} . The members looked at curriculum developed by the Cooperative Extension Nutrition and Health Specialists in Georgia, West Virginia and New Mexico. The Texas team development of the cooking school curriculum included: introduction, evaluation (registration, wrap-up, reunion) and the lessons (Resource Design and Subject Matter Concepts):

Lesson 1 Carbohydrate (starchy and non-starchy), sweeteners
Lesson 2 Reducing fat, saturated fat and trans fatty acids
Lesson 3 Reducing sodium and increasing fiber
Lesson 4 Holiday meal preparation with diabetes in mind

In addition, approximately 5 recipes with tip sheets were included in the 4 lessons. Some 47 recipes were created, analyzed for nutritional value, evaluated for acceptability, flavor, visual appeal, tested by county clientele and compiled by Agricultural Communications Marketing editor into a diabetes cookbook with a regional Texas culture flair *Cooking Well with Diabetes– Tastes of Texas.* The pilot training was conducted early in 2004 to provide practical application of the subject matter taught during the first 12 diabetes lessons plus food preparation, cooking up a show, food safety as well as the nutrition concepts and some self-care tips.

The preliminary results from the Cooking Well with Diabetes pilot testing in 12 Texas counties of the cooking school were as follows: the 126 registrants were 62 years of age with 82 percent female. Participants indicated that they buy and prepare their food eaten at home. Less than 10 percent had ever attended any diabetes cooking school. The average hemoglobin A_{1C} reported was 7 which is within recommendations of the American Diabetes Association.

Some 55 county agents have been trained in 12 hour in-service training on diabetes, self-care and food safety tips as well as how to plan, organize and conduct diabetes cooking schools working through their health coalitions. Yearly training opportunities for agents are scheduled for the spring, 2006. Future annual training will be offered until all county agents trained in advanced diabetes *Do Well, Be Well with Diabetes*^{SM} are trained. During 2004 to 2005, some 55 trained agents conducted cooking schools with 878 diabetic individuals completing registration surveys; 598, wrap-up surveys; and 445, reunion surveys. The average age was 62 years of age with 720 females (82.5 percent) and 158 males (17.6 percent) with 91 percent respondents never previously participating in a cooking school. The average hemoglobin A_{1C} was reported at 6.8.

When asked about type of meal plan they followed, some 14 percent (119) answered diabetes food exchanges; carbohydrate counting, 16.5 percent (134); and 44 percent (354) receiving no meal plan at all. Responses on the registration, wrap-up and reunion surveys documented increased knowledge utilizing healthy food choices for persons with diabetes. The use of the plate method for portion control was increased from 45 percent on the registration survey to 48 percent on the reunion survey.

Special Opportunity for Under-served, Hispanic Audience: A special grant was provided by the Texas Department of State Health Services (TDSHS), Texas Diabetes Program Council for developing an alternative source of diabetes education for people with limited or no access to diabetes education. The primary target of this award are Spanish-speaking Texans with limited or no understanding of English, no access to Spanish-speaking health professionals and with limited or an inadequate transportation. Noteworthy is the cultural differences within the Spanish-speaking communities which may require additional time and reinforcement in order to become acceptable practices. To address this need, multiple copies of a comprehensive diabetes self-care management video tape were be made available through county Extension educators trained to deliver our program, *Do Well, Be Well with Diabetes*^{SM}. There are the outputs from this collaborative effort to support Texas Cooperative Extension diabetes programming effort.

✦ Distributed at least 600 [163 English (HV-29) and 434 Spanish (HV-14)] home patient videos (Spanish and English) entitled *Diabetes Home Video: Skills for Self-care* with personalization as

follows: This program is presented through the combined efforts of the: Texas Cooperative Extension - the *Do Well, Be Well with Diabetes*^{SM} - Texas A & M University. Funding provided by the: Texas Department of State Health Services - Texas Diabetes Program.

✦ Some 164 English tapes were distributed in letter-sized packing boxes and/or supplies for the shipment of video tapes/culturally-sensitive resources to the 150 counties and to the TX DSHS-TDP library.

✦ A TCE professional originally from Mexico compiled a listing of highly technical medical terminology spoken in the video tapes which may not be familiar to the under served, Hispanic clientele being targeted with this educational opportunity. Also, the new blood glucose range can be included with the glossary of terms. The letter was written at a level ordinary people can understand for inclusion by TX DSHS- Texas Diabetes Program professionals who are experts in targeting lower-literacy and Spanish-speaking clientele.

✦ Distributed Spanish translated recruitment brochures, mini-posters, bookmarks, flyers, and three (3) evaluation instruments to 150 Texas counties;

✦ A Spanish-speaking professional editor translated *Do Well, Be Well with Diabetes*^{SM} resources to be included in the same box for shipment along with the videos.

✦ Distributed Spanish translated diabetes exhibit to eighty (80) counties via mailing tubes ordered to send these diabetes exhibits to certain designated counties of trained agents who reside in counties with significant Hispanic populations. Exhibits were disseminated as soon as they are translated, culturally-sensitive pictures are added and reproduced.

✦ Extension marketing editor designed, produced, and disseminated new flyer (English and Spanish) to market home videos to 150 Texas counties;

✦ Provided six (6) patient videos (i.e., three (3) Spanish and three (3) English) including instructions to Department of State Health Services - Texas Diabetes Program's library; and

✦ Provided one (1) copy of materials (i.e., brochures, mini-posters, bookmarks, flyers, evaluation instruments, radio script in English and Spanish) to Department of State Health Services - Texas Diabetes Program.

Extension Diabetes Programming Efforts: The target audiences for these programs include persons with type 2 diabetes, family members, limited income adults, ethnic groups with a high incidence of diabetes (Hispanics, African-Americans, Native-American, other) and Youth with Type 2 diabetes mellitus; and secondary, health professionals working in counties throughout the State**.**

51,135 group contacts and 70,477 individual contacts Number of Participants Reached
~46 % of Participants Under served

Partnerships and cooperative relationships will be established or maintained with**:**

External: Texas Commission for the Blind, Texas Diabetes Program - Texas Department of State Health Services, Advocacy Committee members and regional offices, American

Diabetes Association, American Association of Diabetes Educators, American and Texas Dietetic Associations, National Center for Farm Health, Denton, Dallas and Tarrant Counties Diabetes and Cardiovascular Coalitions, Diabetes Institute and University of Texas Health Science Center of San Antonio, certified diabetes educators, county hospital associations, local hospitals, local health professionals, health organizations, pharmacists, pharmaceutical and diabetes suppliers. In 2004-2005, funding was provided by the Texas Department of State Health Services-Texas Diabetes Program to provide culturally-sensitive video purchase to assist in reaching more of the under served ethnic audience in Texas.

Internal: Extension Food/Nutrition Specialist - Special Food/Nutrition Needs, Family Development/Resource Management–Health, Evaluation and Program Development Specialists, School of Rural Public Health, TAMU Medical School faculty, and TAMUS Health Sciences Center faculties health professionals**,** County Extension Agents in Family and Consumer Sciences, other Extension programs such as those targeting limited incomes or specific ethnic groups.

B. Impact of Programs

Summary of Outcome Measures

Extension diabetes programming efforts educated clientele in 1,938 programs with 51,022 group contacts and 73,159 individual contacts with approximately 46 percent representative of under served populations. In the previous four years, the county programs attracted more than half of consumers with diabetes and health professionals in an average of 134 Texas counties. Some 1,514 volunteers were trained to lead both the diabetes educational 12-part lesson series and 4-part cooking school. These volunteers made 9,965 individual contacts and reached 7,279 diabetic individuals in group settings. With more collaborations, coalitions, and partnerships within the medical communities in local counties, Extension has gained respect in their leadership role of the health coalition as a reliable resource for nutrition and self care. Today, more than ever, nutrition education and self-care education using strategies for effecting behavior changes are recognized as essential in the management of diabetes and in reducing the risk of developing long-term complications. Following the initial education by the diabetes team members (physician, dietitian, nurse, diabetes educator, psychologist, etc.) County Extension agents, trained in diabetes education and in additional professional diabetes education meetings, are well-equipped with knowledge and skills needed to help persons with diabetes achieve the ultimate goal of glucose control. Extension educators are trusted for providing sound advice and their leadership ability in establishing local health coalitions. Ongoing diabetes education was noted with 784 individual diabetes education events in Texas counties.

Outcome Measures (Indicators) Examples

Preliminary data supports that Extension diabetes education has enabled persons with diabetes to make positive changes in behavior and practice self-care as shown from the Extension Diabetes Proxy Study (*Diabetes Educator Journal*, Sept./Oct., 1995). The study was conducted to show the impact of diabetes programming, significant behavioral changes ($p<0.05$) made by clientele, and additional information from focus groups for insight into the barriers preventing diabetic compliance. Evaluation of baseline knowledge and current behavior provided invaluable information about what personal characteristics and knowledge of practices lead clients with diabetes to change certain habits thus improving diabetes control, and leading ultimately to better health and well-being. In 2005, some 78 outcome summaries from programs included the following Texas counties: Anderson, Atascosa, Bailey, Bastrop, Bexar, Brazoria,

Brazos, Burnet, Caldwell, Carson, Cass, Cherokee, Childress, Cochran, Coleman, Collin, Comal, Cooke, Coryell, Dawson, Deaf Smith, Denton, Dimmit, Floyd, Ft. Bend, Franklin, Freestone, Gaines, Galveston, Gray, Grayson, Gregg, Hamilton, Hardeman, Harris, Haskell, Hockley, Hopkins, Hunt, Jack, Jones, Karnes, Kent, Lampasas, Leon, Llano, Lubbock, McCulloch, Matagorda, Medina, Milam, Montague, Nacogdoches, Nolan, Orange, Palo Pinto, Panola, Parker, San Saba, Shelby, Sherman, Smith, Sutton, Tarrant, Taylor, Terry, Tyler, Upshur, Walker, Waller, Ward, Wharton, Wilbarger, Wilson, Wise, Yoakum, and Young.

2005 Key Results of *Do Well, Be Well with Diabetes*[SM]

In 2005, some 1,344 registrants diagnosed with diabetes with mean age of 62 years of age in *Do Well, Be Well with Diabetes*[SM]. Of the 1,344 registrants, 69 percent were females; 74 percent Anglos; 13 percent Hispanics; 10 percent African American; 2 percent Native-Americans; and 1 percent other ethnic groups. Of the 1,344 registering for the course, 863 completed both the pre- and post-tests. However, the 6 month follow-up produced only 195 useable data sets for comparison of results of the three evaluation instruments. Though the sample was small, the positive changes participants made were worth noting. Here are some of the most significant of those results:

- ✦ Of 1,344 registering, 921 (69%) indicated that they had no diabetes classes before joining this Extension diabetes program.
- ✦ For the past two years, 87 percent of the participants attended all 12 classes offered.
- ✦ The days per week they check their blood glucose, as reported on pre- and post-test instruments, increased from 10 to 12 times.
- ✦ Before the program, the number of participants who tested their blood glucose themselves was 971 (72 percent of those beginning the program—as opposed to having it done by a doctor, or someone else, or no one at all). After the classes with 195 data sets, 164 (84 percent) reported testing.
- ✦ Before the classes started, the average blood glucose reading before meals for 1,344 participants was 140.5 milligrams per deciliter(mg/dL). Six months follow up classes, the average blood glucose before meals reading for 195 participants dropped to 127.5 mg/dL.
- ✦ During registration, the average times that blood glucose reading was given for before meals was 693 (57 percent; two hours before meals, 123 (10 percent); before bedtime, 355 (29 percent) for 1,344 participants. Six months follow up classes with 195 respondents, the average times that blood glucose was tested before meals was 110 (58 percent); two hours before meals 35 (18 percent); before bedtime, 57 (30 percent).
- ✦ Before classes, 569 participants reported working out for 30 minutes, 5 days per week. Some 48 percent reported doing no exercise at all. After the classes, 63 percent reported that they exercise 30 minutes. Only 8 percent reported no exercise at all.
- ✦ On the pre-test, some 48 percent of the 1,344 participants reported following no meal plan to manage their condition. Ten percent ate regular meals with no added sugar. Other meal plans [diabetes exchanges (8 percent); carbohydrate counting (11 percent); plate method (3 percent)] continue to be ordered by their physicians with little variation between that time period.
- ✦ In 2005, net savings for 928 female participants are estimated at $67,123 and for 416 male participants at $52,769 for a total estimated economic benefit of >$73.8 million dollars.

Other Outcome Indicators

Awareness of Managing Food Choices Through Healthful Eating To Control Blood Glucose

51,135 group contacts and 70,477 individual contacts became aware of importance of controlling blood glucose through healthful eating(decreasing fat, sugar, increasing complex carbohydrates) and self-care (self-glucose monitoring, exercise, visiting with health care provider, and taking medications and/or insulin diabetes) through the Extension diabetes programming in Texas counties.

Awareness of importance Self-Blood Glucose Monitoring

51,135 group contacts and 70,477 individual contacts awareness of importance of adequately monitoring blood glucose levels 4 times a day

Awareness of Exercising to Control Blood Glucose

51,135 group contacts and 70,477 individual contacts awareness of importance of engaging in daily exercise

Visiting with Health Care Provider

Number of individuals visiting with physician, dietitian, nurse, diabetes educators - Data not available

Taking Prescribed Medication and/or Insulin

Number of individuals taking prescribed medication and/or insulin - Data not available

Summary of Output Measures

(via 12 individual districts summaries for diabetes, diabetic individuals)

1,436	Number of group method contacts
51,135	Number of people completing programs (Group Methods)
70,477	Number of participants served by (Individual Methods) (Trend is that clientele with diabetes continue to seek information via individual assistance)
27,686	Number of written diabetes educational materials distributed via newsletters, self-study guides and others. Diabetes resources will be included in a diabetes curriculum Phase 1. *Do Well, Be Well with Diabetes*^{SM}, a 12-week Nutrition and Self-Care TCE Curricula and Phase 2. *Cooking Well with Diabetes*^{SM}, a 4-week diabetes cooking school curriculum with accompanying PowerPoint visuals with each lesson, handouts, and some web-based educational resources plus 600 additional publications for reaching Hispanic under-served audience

Many health professionals, clientele with diabetes, internet users, seek diabetes information via the web via Extension. To accommodate this continual access to knowledge, web based Extension diabetes nutrition/self-care information can be found at:
Food/Nutrition http://fcs.tamu.edu/food_and_nutrition/index.php
and FCS; http://fcs.tamu.edu/ and Health websites *Do Well, Be Well with Diabetes*^{SM}
http://fcsagents.tamu.edu/health/diabetes/index.php
http://nutrition-newsletters.tamu.edu/ food/nutrition electronic newsletters Health Hints newsletters http://fcs.tamu.edu/health/ , diabetes nutrition and health related bookmarks organized http://micks-picks.tamu.edu/

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 6, i.e., Diabetes Education.

C. Sources of Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

Multi-State Extension: TX, MO, NM, WV, KY, KA, GA
Multi-State Research: None.
Integrated Research and Extension: Collaboration among Extension nutrition (registered/licensed, dietitian) specialist, Department of Nutrition and Food Science, and Extension health specialist (registered/licensed nurse); diabetes response team made up of County Extension Agents in Family and Consumer Sciences in several Texas counties trained in diabetes education via special Statewide training and participation in American Association of Diabetes Educators Annual Meetings; shared qualitative diabetes research plus economic impact report data with specialists and administrators in attendance at the Priester Conference (Lexington, KY, 2005) and various outside partnerships/support (see Target Audience).

State TCE-TAES Plan of Work Program 7: Better Living for Texans
Key Theme: Human Health, Human Nutrition

A. Description of Activity

An estimated 17% of Texans live in poverty. Research suggests that individuals who live in poverty consume diets that are not in agreement with the Dietary Guidelines for Americans or the recommended food guidance system (MyPyramid). In addition, diets of individuals in low-income households are often lacking in fruits, vegetables, and dairy products. This is due, in part, to a lack of knowledge and an inability to purchase and prepare healthy foods on limited budgets. Individuals who live in poverty are also at risk for being food insecure. This means that the ability to acquire safe and nutritious foods is limited or uncertain. In 2005, the USDA reported that nearly 16% of Texas households had experienced food insecurity between 2002 and 2004. A 2002 survey of 1,000 households participating in the Food Stamp Program throughout Texas found that more than half of those households had experienced food insecurity or hunger within a 12-month period.

Because food security and hunger are present in limited resource households in Texas, the core of the Better Living for Texans (BLT) program during 2005 included a series of 3 lessons, which focused primarily on food resource management as well as food safety. Curricula and supporting educational materials used in BLT were research-based, targeted toward limited resource audiences, and available for county Extension agents in both English and Spanish. Newspaper articles as well as television and radio were other avenues were used to market the BLT program and distribute information about food safety, food resource management, as well as basic nutrition to limited resource audiences.

As in previous years, the primary audience for BLT during 2005 was food stamp recipients and applicants. However, BLT was granted five waivers by USDA/FNS which allowed the inclusion of additional audiences: (1) families of students in schools with more than 50% of the student population eligible for free and/or reduced price lunches, (2) families of Head Start participants, (3) families whose children participate in the Summer Food Service Program, (4) families of women and children who participate in the Special Supplemental Food Program for Women, Infants, and Children (WIC), and (5) families of participants who receive food from commodity food distribution sites.

During 2005 year, BLT was conducted in 208 counties across Texas, resulting in 204,533 direct educational contacts. Of those contacts, 37.8% were made to Caucasian, 14.9% to African Americans, and 46.7% to Hispanics. Less than 1% of those contacts were made to individuals who identified themselves as Native American or Asian American. Women and youth comprised more than half of the educational contacts.

Internal linkages were developed with several sources. Nutrition specialists recommended curricula and educational materials, and participated in the training of agents and paraprofessionals. Evaluation specialists assisted in the development of instruments to measure the impact of the program. In addition, linkages were developed with external sources including the Texas Department of State Health Services (WIC program), the Texas Health and Human Services Commission (Food Stamp Program), as well as local housing authorities to identify and recruit eligible participants. Agents also marketed and conducted BLT programs in conjunction with other community organizations that serve the targeted audience including public housing

authorities, food banks, food pantries, churches, community centers, and congregate feeding sites.

B. Impact of Programs

Output Indicators:

# of educational activities conducted:	13,880
# of direct educational contacts:	204,533
# educational contacts via newsletters and self-study guides	201,594

mass media

# news releases prepared	1,664
# news outlets receiving releases	1,601
# radio releases prepared	424
# radio stations receiving releases	205
# television releases prepared	2054
# television stations receiving releases	71

Outcome Indicators:

The extent to which participants met selected outcome indicators was based on a statewide telephone survey of a sample of individuals who had completed a three-lesson series as a part of the BLT program during 2005. Survey respondents were asked the extent to which they practiced specific food handling and food resource management behaviors, both before and after participating in BLT. Demographic questions as well as the 18-item USDA Household Food Security Module were included as part of the survey instrument. This module evaluates the food security status of households and identified the extent to which hunger is present in the home. Trained interviewers administered the telephone survey to the 221 individuals who agreed to participate. Surveys were conducted in both English and Spanish.

Outcome Indicator #1:

Extent to which BLT participants adopt planning meals in advance, shopping for food with a list, and comparing food prices, to extend food dollars until the end of the month.

Results: The percentage of participants who planned meals, shopped with a list and compared prices either "always" or "most of the time" was significantly ($p<.05$) higher after completion of the BLT program compared to before. More than 40% of respondents reported that they planned their meals either "always" or "most of the time" before attending the BLT program. After completing the program, the percentage rose to 74%. Less than one-half (49%) of respondents reported that they shopped with a list "always" or "most of the time" before BLT. Afterwards, however, that percentage rose to 81%. While more than half (56%) of the respondents acknowledged that they compare prices when shopping either "always" or "most of the time" before BLT, more participants (87%) were practicing this behavior afterwards. The extent (1=never; 5=always) the identified food resource management behaviors were being practiced by the respondents before and after BLT are illustrated in the table below.

Targeted Behavior	Extent to which behavior was practiced before BLT	Extent to which behavior was practiced after BLT	Level of significance
Planning meals (n=221)	3.27 [a]	4.07	<.05
Shopping for food with a list (n=221)	3.30	4.31	<.05
Comparing prices when shopping for food (n=221)	3.61	4.57	<.05

[a] Likert scale was utilized to measure extent of change and was defined as 1=never, 2=seldom, 3=sometimes, 4=most of the time, and 5=always.

In addition to these behaviors, participants were asked to identify other practices that have helped them stretch their food dollars. Of the 125 respondents who responded to this open-ended question, 10% (n=13) reported buying fewer sweets and soda and 7% (n=9) reported not shopping for food when hungry. The use of unit pricing to identify economical food buys was another behavior adopted by a smaller number of participants.

Participants were also asked to estimate the amount of their own money spent on food each month both before and after participating in BLT. On average, survey respondents reduced their monthly out-of-pocket food expenses by $38.92 per month (16.5% reduction). While the reduction in out-of-pocket food expenses is encouraging, nearly 39% (n=85) of the households surveyed had experienced food insecurity during the 30 days immediately before participating in this survey.

Outcome Indicator #2

Extent to which BLT participants practice safe food handling behaviors to reduce the risk of foodborne disease.

Results

This outcome indicator is related to three food safety practices: (1) reducing the amount of time cooked foods are left out before eating or refrigerating; (2) hand washing; and (3) the frequency in which cutting boards, knives and counter tops are washed with hot soapy water after working with raw meat or poultry.

Prior to the program, respondents reported leaving food out before eating or refrigerating for an average of 96 minutes. After BLT, the average amount of time food was left out dropped to 30 minutes. The change in the amount of time prepared foods were left out after BLT compared to before the program was significantly different. With respect to hand washing, 67 of the respondents reported that before BLT, they “always” washed their hands before preparing food. After the program, this percentage significantly rose to more than 92%. In addition, the percentage of participants who reported “always” washing their cutting boards, knives, and countertops with hot soapy water after working with raw meat or poultry rose from 85% (before BLT) to 97% (after BLT). The extent (1=never; 5=always) the identified food safety behaviors were being practiced by the respondents before and after BLT are illustrated in the table below.

Targeted Behavior	Extent to which behavior was practiced before BLT	Extent to which behavior was practiced after BLT	Level of significance
Wash cutting board, knife, and counter tops with hot soapy water after cutting up raw meat or poultry (n=219)	4.49 [a]	4.91	<.05
Washing hands with soap and water for 20 seconds before and during cooking (n=221)	4.36	4.90	<.05

[a] Likert scale was utilized to measure extent of change and was defined as 1=never, 2=seldom, 3=sometimes, 4=most of the time, and 5=always.

Participants were also asked to identify additional food safety practices they had changed since attending the BLT program. Of the 125 participants who responded to this open-ended question, 42% (n=53) reported storing food properly, 18% (n=22) reported thawing food, especially meat, correctly, and 8% (n=10) reported washing fruits and vegetables.

Impact of the Program

A majority (77%) of subjected who participated in the BLT program rated the program as excellent. In addition, more than 80% of the respondents reported that BLT was their first exposure to a Cooperative Extension educational program. These findings along with the reported behavioral changes and the reduction in out-of-pocket food expenses suggest that BLT is effective in teaching limited resource audiences important skills that improve one's ability to prepare safe meals on a limited budget.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 7, Better Living for Texans.

C. Source of TCE-TAES Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of TCE-TAES Impact

Multi-State Extension – WS, OH, CO

TAES – None
Integrated Research and Extension - Research methodology is integrated into the BLT program via the state-wide telephone survey conducted each year. Results, which have been featured in this report, have recently been presented at national nutrition meetings for discussion with other nutrition researchers and program directors. Results from the 1999-2000 state-wide survey were published in the December 2001 issue of the *Journal of Extension* (http://www.joe.org/joe/2001december/rb4.html).

Goal 4: Greater harmony between agriculture and the environment

Overview

Texas Cooperative Extension and Texas Agricultural Experiment Station (TAES) scientists are engaged in several efforts to develop agricultural and natural resources programs that protect the environment and increase environmental stewardship.

Extension and TAES efforts to better protect water quality are based on the Extension model of developing monitoring and evaluation programs to generate objective, timely and accurate research-based information. Later, Extension encourages stakeholders to take this information and incorporate it into decision-making processes. Extension demonstration projects verify whether the best management practices work well in the field and give others an opportunity to observe first-hand the benefits of improved management strategies and technologies. In many activities, education programs are developed for youth and are presented through the public schools, while additional education programming is directed for adult audiences and other stakeholders.

A few examples of Extension and TAES water quality programs during 2005 are shown below.

Extension specialists and TAES researchers are engaged in monitoring and outreach efforts to prevent phosphorus in dairy manure from running off into watersheds of the Bosque River and the Leon River. The project, led by Extension dairy nutritionist Barry Lambert and TAES researcher James Muir, is a collaborative effort that involves scientists Saqib Mukhtar, Jeff Tomberlin, and David Weindorf, and Man Yu (Tarleton State University). The overall goal of the study is to develop changes in dairy farm management that will lessen phosphorus runoff to the region's waters, including such efforts as improving phosphorus recycling on the farm, using different plants as vegetative buffers, and adjusting cattle feeds so dairy cows excrete less manure. In another study, Saqib Mukhtar is leading an effort to evaluate treatment technologies with a potential for removing phosphorous from dairy wastewater. Through a 319 grant, companies establish a pilot treatment system at a dairy and the system is monitored for efficiency of contaminant removal.

Russell Persyn (TCE) and Raghavan Srinivasan (TAES) lead an effort to develop a Watershed Protection Plan for Cedar Creek reservoir in North Central Texas. The project will evaluate potential contaminant sources and best management practices for removal of the contaminants. Once the model is perfected, stakeholder meetings will be conducted to gather local information and assess Best Management Practice (BMP) effectiveness. Local educational programs will raise awareness regarding BMP implementation to reduce the impact on the reservoir.

In the Texas High Plains region, Extension and research faculty working with the Texas High Plains Evapotranspiration (TXHPET) Network developed a new database-driven web site (txhighplainset.tamu.edu). Through close collaboration of the North Plains ET and South Plains ET Networks, the TXHPET developed a searchable database from which data from all weather stations for the entire period of record for both networks can be accessed. Daily or hourly data can be presented in table, text file, or graphical formats; they can be requested in English or metric units. A user manual was published (Porter, Dana, Thomas Marek, Terry Howell, and Leon New. 2005. The Texas High Plains Evapotranspiration Network (TXHPET) User Manual (Publication AREC 05-37, Texas A&M University Agricultural Research and Extension Center, Amarillo 37 pp) to introduce users to the system's capabilities. Over 450 hardcopies of the manual have been distributed since December 1, 2005, and the manual is now

available online. Internal (TAES and TCE) seminars initiated in November, 2005 introduced research and extension faculty to the system. News releases, trade journal articles, and presentation at public meetings are increasing public awareness of TXHPET. Response by users and supporting agencies has been very positive.

Extension specialists Mike Masser and Peter Woods of the Wildlife and Fisheries Sciences Department continue to work with county Extension agents in Matagorda, Calhoun, and Wharton counties to develop markets for catfish raised in coastal aquaculture operations. The program is based on working with aquaculture producers and cooperatives companies in the private sector, as well as regional water suppliers. The effort developed workshops to present information about such issues as how to start up and market farm-raised catfish; water quality management in fish ponds; and culminated in the creation of the Catfish Association of Texas. During 2005, the industry continued to expand to approximately 2500 acres. The catfish are marketed through the local processing cooperative as well as to other fish processing companies.

Sources of Funding and FTEs

TCE Funding: Smith Lever and State Matching

		$ X 1000 Actual FY 2005
Program 8 – Water Quality & Quantity Management		4,433
	FTEs	198.33
Allocated Resources Goal 4		**4,673**
	FTEs	**226.74**

TAES Funding: Hatch, and state, federal and private contracts and grants

Source of Funding and FTEs

Hatch Funds ($ x 1000):	1,334
State Funds ($ x 1000):	6,623
FTEs:	64.46
Number of Projects:	187
Number of Publications:	716

State TCE-TAES Plan of Work Program 8: Water Quality and Quantity
Key Theme: Water Quality, Natural Resource Management, Drought Prevention and Mitigation

A. Description of Activity

As the population of Texas increases, and needs for water become greater, it is becoming increasingly apparent that several regions of the State will be unable to provide sufficient supplies of high quality water for agriculture, drinking water, urban uses, industry, and the environment unless extraordinary measures are taken.

To help Texas manage its water resources to the greatest possible extent, scientists and specialists with the Texas Agricultural Experiment Station (TAES) and Texas Cooperative Extension are working with the Texas Water Resources Institute and other partners to develop and implement comprehensive research, outreach, and extension programs. Common goals of these programs include the following:

- Ensure that water supplies are used efficiently in agriculture production, landscape maintenance, in the home, and in other settings.
- Protect water quality by preventing contamination in a number of settings, including agricultural practices, the operations and maintenance of on-site wastewater treatment systems, landscape and turfgrass maintenance, and the use and disposal of household chemicals.
- Identify opportunities to develop alternative, untapped, sources of water, including extensive efforts in water conservation, water and wastewater reuse, the efficient treatment of saline and brackish waters, and recovery of brines resulting from oil and gas operations.
- Provide objective research-based information water managers, policy makers, and the public can use to evaluate the merits of proposed measures to conserve water, increase water supplies, develop infrastructure, and improve water quality by treating sources of impairment.
- Bring timely information about critical issues to water resources managers, policy makers, and the public, including such topics as water marketing, the formation of groundwater districts, the need to manage storm water runoff, and new governmental regulations and programs that affect water resources management.
- Promote widespread education programs directed at school children and adults, including efforts touching on such issues as drinking water quality, environmentally-friendly methods to maintain landscapes, and ways to achieve water conservation in the home and on the farm.

<u>Highlighted Programs</u>

Providing Educational Resources to "Urban Ranchers" Throughout Texas

In order to help the thousands of Texans who are moving to rural suburbs for the first time, Texas Cooperative Extension has created the Master Urban Rancher program. This program, which is led by Wayne Thompson of Harris County Extension, provides educational resources and training for residents who find themselves living in the country for the first time. Topics addressed through these educational programs include how to test soil and water quality;

how to manage landscapes while avoiding overuse of irrigation water, nutrients and pesticides; how to manage ponds for fishing and recreation; and how to manage onsite wastewater treatment systems. When homeowners complete the training, they can be certified as "Master Urban Ranchers." The program is now being offered in Harris, Waller, and Brazoria counties and several other counties throughout Texas are considering adopting this effort in the near future.

Rainwater Harvesting

Texas Cooperative Extension agents and specialists and Texas Agricultural Experiment Station researchers are developing an educational program regarding the harvesting of rainwater to meet landscape and wildlife water needs. This alternative source of water can be used around the home to irrigate landscape plants. The delivery of the program is led by Billy Kniffen, TCE Menard County Agent, with cooperation by Russell Persyn, Dana Porter, and Bruce Lesikar, Extension specialists in the Texas A&M University Biological and Agricultural Engineering Department; Monty Dozier, Extension specialist in the Soil and Crop Sciences Department; Mike Mecke, Texas Water Resources Institute; Janie Harris, Family Development and Resource Management; Barbara Storz, Hidalgo County Horticulture Agent and researcher Valeen Silvy of the Texas Water Resources Institute. Through this program, several conferences have been carried out to present methods to harvest rainwater. Informational brochures were developed which describe methods to harvest water for landscape irrigation and wildlife watering. A rainwater harvesting website was developed to share the information with the general public.

B. Impact of Programs

Output Indicators

A.4.1.3: The total number of people completing non-formal education programs on sustaining and protecting ecosystem integrity and biodiversity while improving the productivity of the U.S. agricultural production system.

A variety of educational programs were implemented to deliver information on sustainability and maintaining agriculture production systems. Agricultural production is vital to the Texas economy. These production systems required chemical inputs for viability. These inputs are managed to minimize impact on our ecosystems. Several watershed management programs are being implemented to raise awareness regarding the ecosystem and how all of the activities in an ecosystem are interrelated. Watershed protection plans are being developed for watersheds with impaired stream segments and their associated implementation plans will cooperate with the educational programs. Delivery methods included one-on-one contacts and producer meetings conducted by Extension agents and specialists. Total attendance at these events was 63,146 contacts.

A.4.2.1: The total number of people completing non-formal education programs on sustaining and/or protecting the quality and quantity of surface water and ground water supplies.

A variety of education methods were utilized to deliver information on sustaining and protecting the quantity and quality of surface water and ground water supplies. North Central Texas includes rapidly-urbanizing watersheds with growing water demands. To meet these demands, education programming focused on educating residents about best management practices to conserve water, including efficient irrigation devices and management strategies to save water on agricultural crops and in the home. Delivery methods included one-on-one

contacts and producer meetings conducted by Extension agents and specialists. Total attendance at these events was 176,677 contacts.

B.4.2.1: The total number of people completing non-formal education programs on water quantity and water quality who plan to adopt one or more water management practices after completing one or more of these programs.

Several Extension programs provide extensive training to participants as a requirement of State-mandated programs for licensing and continuing education, including efforts in onsite wastewater treatment and landscape irrigation management. To meet these needs, Extension offers onsite wastewater treatment courses throughout the State and via the World Wide Web. In 2005, more than 850 people (roughly 14% of the septic systems professionals in Texas) took part in these classes. Three new courses were developed during the year to assist in attracting new students.

Through Cooperative Extension programs led by the Texas A&M Soil and Crop Sciences Department, homeowners engaged in water well screening programs to test the levels of nitrate and other contaminants in their groundwater. As a result of these screening programs, education and outreach information was developed describing how wells and surrounding wellhead areas should be managed to protect water quality. In Colorado and Real Counties, for example, we screened 165 private water well samples for the presence of fecal coliform bacteria and determined TDS and nitrate concentrations: 36 samples (21.8%) were positive for fecal coliform, average TDS was 322 ppm, average nitrate-N was 2.0 ppm with a range of 1 to greater than 30 (limit of my equipment) ppm. Each participant was given information about how to chlorinate or "shock treat" their well to lessen contamination as well as educational materials about potential health risks posed by contaminated drinking water.

A.4.3.2: The total number of people completing non-formal education programs on public policy issues affecting agricultural production and ecosystem integrity and biodiversity.

Water policy is a key issue when managing a limited water resource. Programming raises awareness of everyone's needs regarding the water resource. Allocating this limited resource is challenging and can result in intense local negotiations. The water planning framework in Texas allows redevelopment of the water plan every five years. Extension and research professionals are delivering programs to raise awareness of water management strategies and what policies can be implemented to share this valuable resource to meet all needs: domestic, municipal, agricultural, industrial, recreational, wildlife, aquatic and marine. Delivery methods included one-on-one contacts and producer meetings conducted by Extension agents and specialists. Total attendance at these events was 56,013 contacts.

In cooperation with the U.S. Bureau of Reclamation, Cooperative Extension and TAES personnel continue to distribute a newsletter, "Drought Watch on the Rio Grande." This newsletter, circulated in both print and email forms, reaches a large audience and provides timely information on reservoir levels, expected stream flows, and groundwater supply data.

B.4.3.2: The total number of people completing non-formal education programs on public policy issues affecting agricultural production and ecosystem integrity and biodiversity who plan to become actively involved in one or more public policy issues after completing one or more of these programs.

Groundwater remains an issue of concern. Educational material describing water rights is being developed to assist in reaching landowners, concerned citizens and groundwater district managers. These groups need material that can help the public make informed decisions on how to best manage their local water resources. These educational materials provide the base knowledge about Texas water law and issues landowners should consider before marketing water from their property.

Throughout 2005, scientists with the Texas Agricultural Experiment Station were significantly involved in a number of water resources studies, dealing with such issues as economic assessments, policies, the treatment and reuse of dairy manure to protect the environment, groundwater management in the High Plains, developing complex data about environmental issues that can be used to target watershed restoration efforts, water quality issues pertaining to fecal bacteria, and brush control to increase water yields. Highlighted programs identified here are discussed below.

Precision Irrigators Network

Research and Extension personnel at the Texas A&M University Agricultural Research and Extension Centers in Uvalde and Amarillo are collaborating on efforts to increase water conservation among agricultural producers through the Precision Irrigators Network (PIN). The work is led by Texas Agricultural Experiment Station (TAES) researcher Giovanni Piccinni and Extension Agent Ken White at Uvalde, and TAES Tom Marek at Amarillo. Other cooperators include TAES researchers Tom Cothren of the Texas A&M University Soil and Crop Science Department and Tom Gerik of the Blackland Research and Extension Center in Temple. The project is funded by the Texas Water Development Board. The goal of this study is to determine if agricultural producers can increase irrigation efficiency, and water savings, if they are provided with real-time climate data and training into the latest water management simulation models. The hope is that significant water savings can be achieved as agricultural producers in this region collaborate with the researchers and begin timing and scheduling irrigations based on climate data and plant water use needs. In addition to increasing conservation, this project also has the potential to reduce the incidence of plant disease and other environmental stressors that can harm crop production.

The Pecos Basin Project

Determining the extent to which clearing salt cedar can increase flows of water in the Pecos River and assessing sources of saline water that impair water quality are major goals of the Pecos Basin Assessment Project. The project is led by Charles Hart, who leads TAES and Extension activities at the Far West Texas regional office in Fort Stockton. Other lead members of the project team include researchers Seeichi Miyamoto and Zhuping Sheng of TAES at El Paso, Extension specialists Mike Mecke and Will Hatler of Fort Stockton, Kevin Wagner of the Texas Water Resources Institute, and Texas A&M University graduate student Allison McDonald. Project activities include studying the extent to which clearing saltcedar is increasing flows of the water both in the Pecos River as well as nearby aquifers; using remotely sensed data, geographic information systems, and computer models to assess how sources of salinity are

affecting water quality; and working closely with stakeholders to learn about their concerns. Ultimately, this Texas State Soil and Water Conservation Board-funded project will develop a plan to manage the waters of the Pecos Basin in Texas to maintain and protect water quality.

Demonstrating Innovative Methods to Treat Dairy Wastes and Improve Water Quality

Evaluating the effectiveness of new and innovative technologies to treat dairy wastes in Central Texas is the goal of a demonstration project led by Saqib Mukhtar of Texas Cooperative Extension and the Texas A&M University Biological and Agricultural Engineering Department. In this effort, two innovative treatment systems are now being evaluated. To-date, six state-of-the-art technologies have been tested in the field and cooperating farms and dairies. Ultimately, the real benefit of this project is that it may hasten the extent to which newly developed treatment methods are introduced and used by dairy producers in Texas, thus protecting water quality in the Bosque River watershed and other regions that include intensive confined animal feeding operations. This project is funded by the Texas State Soil and Water Conservation Board and includes close collaboration between Extension, TAES, and Brazos River Authority.

Turfgrass Sod Management

Extension Specialists Roger Havlak and Jim McAfee are leading efforts to train and education County Extension Agents (CEAs) and the public about management factors that need to be considered when producing turfgrass sod. Havlak, an Extension Specialist in San Antonio, and McAfee, an Extension Specialist in Dallas, are leading more than 20 CEAs through a four-year training program where they will be taught how to produce turfgrass sod for golf courses, sports fields, commercial and residential lawns, and highway medians and rights of way. The training, which is co-sponsored by the Texas Turfgrass Association, includes a vigorous discussion of water management issues including water conservation, the use of recycled or reclaimed waters, and the need to limit nutrient and pesticide applications in order to prevent the likelihood of non-point source pollution and runoff.

C. Sources of Federal Funds

TCE: Smith-Lever and State Matching
TAES: Hatch, federal, state, and private grants and contracts

D. Scope of Impact

Multi-State Extension – AR, NC, MN, WS, AR, WS, MI, RI, MS, NM, OK, LA
Multi-State Research – Multi-State Projects NC-208, W-1128, NE-162 (LA, NM, AZ, CO, FL, ME, MT, OR, UT, WI)
Integrated Research and Extension: Integration of the Research and Extension program is being accomplished through the Texas Water Resources Institute (TWRI). TWRI assists the agriculture program consisting of both Texas Cooperative Extension and Texas Agricultural Experiment Station in identifying program areas needing additional attention.

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

Financial Management. Changes in bankruptcy laws became effective on October 17, 2005, resulting in a rush of filings prior to this date. Debt repayment consumes a large share of household income. Total consumer debt outstanding at the end of 2003 exceeded $2.0 trillion nationwide and personal bankruptcies increased nationally by 5.2% between 2002 and 2003. The Southern District of Texas led the nation with the highest percentage increase in total bankruptcy filings of any of the 94 federal judicial districts from 2002 to 2003, with a 22.2% increase. Recent college graduates are carrying heavier debt loads than a decade ago. Approximately 65 million U.S. households will probably fail to realize one or more of their major life goals, primarily due to a lack of a comprehensive financial plan. In households with annual incomes of less than $100,000, those with financial plans have twice as much in savings and investments as those without financial plans.

Parenting. Changes in family life over the last several decades have influenced the ability of family members to adequately address the needs of children and aging adults. Families need access to research-based educational resources and training programs to assist them in their job of raising responsible citizens. According to recent statistics, over one-fourth of today's children reside in single-parent households, where they are much more likely to experience poverty (Forum on Child & Family Statistics, 2004). Nearly five million infants, young children, and teens live in households headed by a grandparent. Over 20 million children are currently living apart from their biological fathers. Researchers have found that children who group up with absent fathers are at a greater risk for poverty, school failure, child abuse, suicide, criminal behavior, emotional and behavioral problems, early sexual activity, and drug and alcohol abuse. These risks diminish substantially when children grow up with an active and loving father in the home (Lamb, 1997).

Life Skills Education. Youth issues were identified by Texas residents as a high priority for Extension programming. Nationally, youth related issues include Weight Management, Harmful Substance Abuse, Teen Sexuality, Accepting and Respecting Others, Youth Violence, Unsupervised Time, Youth Literacy, and Death by Accident. During 2004, Texas Counties identified a number of youth related issues which strongly parallel national concerns. Texas 4-H offers nine areas of program delivery to meet the needs of a diverse state with complex issues. A comprehensive urban plan includes faculty from the 20 most populated Texas counties who work cooperatively toward a consistent program directed to serve the needs of urban youth. Furthermore, focused efforts are directed toward traditionally under-served clientele and accommodations were made to meet the needs of the disadvantaged.

Volunteer Development. Mobilizing and organizing a strong volunteer base is essential to the mission of Texas Cooperative Extension. TCE has the largest volunteer program of any agency in Texas. But with increasing competition for resources, funding, staff and time, sound decisions regarding volunteer recruitment and management will be crucial to sustaining current programs, partnerships and developing new opportunities. All research concerning agencies of the future leads us to know that expanding the outreach and programming components through all volunteer efforts is essential. Volunteers are the real heart and hands of many different Extension programs, extending the reach into every community and every neighborhood in Texas. Extension volunteers help people to gain knowledge and skills that will benefit them for life. And, in return, volunteers have the satisfaction of knowing they're making a difference for their friends and neighbors. Much of the work Extension volunteers do grows out of their

interests and experiences, but they also receive training from educators from various disciplines. Thus volunteers improve their own skills while helping others.

Partnerships and Collaborations. During 2005, Texas Cooperative Extension conducted many successful educational programs which were expanded via partnerships and collaborations. Historically, these partnerships and collaborations have been with citizen groups, other universities, other agencies and key stakeholders. The Texas Community Futures Forums were conducted in all 254 counties with key input from many of these partners. Emphasis is being given to groups with interest in community, youth and family concerns. Special attention will be devoted to traditionally under served sectors. Care will be given to meet the needs of the disadvantaged.

Community Development. Stakeholder input provided by over 10,000 Texans in all 254 counties of the state through the Texas Community Futures Forum indicate that issues associated with development of their communities are pervasive and a very high priority. Specific issues include concerns about individual, community and regional economic viability and maintenance of a high quality of life. Programs are designed to increase the capacity of targeted Texans to respond to rapidly changing forces that affect their community economy and quality of life through increasing understanding of these forces and potential responses. Specific programs targeted at engendering and fostering home-based and micro-enterprises, support for identification and realization of entrepreneurial opportunities in agriculture, forest and other natural resource industries; development of tourism and recreational opportunities for local economic benefit; and community leadership training.

Programs in the areas under Goal 5 continue to provide Texans with research-based information in order for them to make sound decision on the implementation of best management practices and adoption of technologies. Educational programming has been and will continue to be driven by the needs of our clientele. Results from the Texas Community Futures Forum, and guidance from Executive Program Councils and program committees serve as the basis for this strategy. The data presented in this summary and the following section represents the efforts of Year 05 of this Plan of Work. Educational programming efforts have been ongoing for many of the areas represented and continue to provide Texans with opportunities for increased profitability and competitiveness. Future plans will build on past experiences and emerging issues that may affect our state and clientele.

Source of TCE-TAES Funding and FTEs

TCE Funding: Smith Lever and State Matching

		$ X 1000 Actual FY 2005
Program 9 – Financial Management Education		666
	FTEs	29.28
Program 10 – Parenting		1,566
	FTEs	68.80
Program 11 – Life Skills Education		2,131
	FTEs	93.64

Program 12 – Volunteer Development		1,142
	FTEs	50.36
Program 13 – Partnerships & Collaborations		360
	FTEs	15.86
Program 14 – Community Development		1,669
	FTEs	14.64
Allocated Resources Goal 5		**8,482**
	FTEs	**388.65**

TAES Funding: Hatch, and state, federal and private contracts and grants

Source of Funding and FTEs	
Federal Funds ($ x 1000):	265
State Funds ($ x 1000):	351
FTEs:	6.99
Number of Projects:	36
Number of Publications:	54

State TCE Plan of Work Program 9: Financial Management Education
Key Theme: Family Resource Management

A. *Description of Activity.*

Debt repayment consumes a large share of household income. Total consumer debt outstanding at the end of 2003 exceeded $2.0 trillion nationwide and personal bankruptcies increased nationally by 5.2% between 2002 and 2003. The Southern District of Texas led the nation with the highest percentage increase in total bankruptcy filings of any of the 94 federal judicial districts from 2002 to 2003, with a 22.2% increase. The bankruptcy filing rate declined in 2004 for the first time since 2000, but expected to increase in the first quarter of 2005, based on trends in consumer debt levels, credit default rates, and credit card charge-off rates, all of which have increased.

Approximately 65 million U.S. households will probably fail to realize one or more of their major life goals, primarily due to a lack of a comprehensive financial plan. In households with annual incomes of less than $100,000, those with financial plans have twice as much in savings and investments as those without financial plans.

Thirty percent of the U.S. workforce who are eligible for 401(k) plans at work fail to participate, and only 20 percent of workers employed by companies with less than 100 workers have any kind of retirement plan.

Two-thirds of all employees in the United States report that they have trouble paying their bills on time and worry about money. Seventy-five percent of employees say that they have recently faced at least one significant financial problem. Individuals and families of all income, ethnic and educational groups in Texas are facing many financial challenges.

Internal and External Linkages were established and maintained as follows: During 2002, the new national Extension initiative, *Financial Security in Later Life*, was introduced to urban Extension agents through in-service training. A new partnership agreement was signed with the Federal Deposit Insurance Corporation (FDIC) to promote *Money Smart*, a curriculum targeting the un-banked. County Extension agents collaborated with banks, savings and loans, credit unions, employers, consumer credit counseling services, bankruptcy trustees, and directors of programs targeting financially insecure families, including a multi-county prison system. Cooperative relations were established with Consumer Action, a San Francisco-based consumer organization, to promote the *Money Wi$e* curriculum and a small grant for training new Extension Agents was obtained in 2004. Under contract with the Dallas Regional Office of the Women's Bureau, U.S. Department of Labor, a new project, *Wi$e Up - Financial Planning for Generation X Women* was undertaken in 2003 and continued in 2004 and 2005 with new funding for 2005-06 from State Farm Insurance. In Travis County (Austin, Texas), Extension leadership led to the creation of the Financial Literacy Coalition of Central Texas, a group of more than 30 collaborating groups from public, private, and non-profit sectors that now trains volunteers to provide financial education in the community.

Better Living for Texans programming is funded by the USDA through the Texas Department of Health and Human Services. Agents collaborate with local partners to obtain matching resources, to find sites for classes that are convenient for clients (food stamp recipients of various ages and in diverse county communities and neighborhoods). While the program's primary goal is to promote improved nutrition, another important goal is to teach how to make economic food choices while optimizing nutrition.

To implement the Financial Readiness program, Extension agents at Ft. Hood and Ft. Bliss coordinated with unit commanders, Consumer Credit Counseling and community consumer services organizations.

Teachers from Texas high schools link with county Extension agents and local credit unions to deliver the *NEFE® High School Financial Planning Program* curriculum enrichment program provided free of charge by the National Endowment for Financial Education in partnership with the Cooperative Extension System and Credit Union National Association.

Money 2000plus℠ began in 1996 and continued through 2002, but some counties in 2003 began to make plans to transition to America Saves, a component of Financial Security in Later Life, although Harris County (Houston, Texas) continues to publish a Money 2000plus℠ Newsletter with a large circulation. Better Living for Texans began in 1998 and is a continuing program. High School Financial Planning began in 1991 and is also a continuing program. Financial Readiness programming at Ft. Hood and Ft. Bliss began in 1999 and continues through 2005. Financial Security in Later Life began in 2002 for a five-year period. Wi$e Up began in 2003 and will continue through 2006.

B. Impact of Programs

Financial Literacy Coalition of Central Texas. At the end of 2005, 827 educational contacts were made with low-income participants through 95 financial literacy classes. The classes were taught by 166 trained volunteer instructors. Primary curricula used in the financial literacy classes include the FDIC Money Smart curriculum and the University of Illinois' Welcome to the Real World.' Classes were taught at thirteen locations throughout Austin. 52 percent of the participants attended classes taught in English and 48 percent attended classes in Spanish. Participants completed the Before and After Course Evaluation provided with the Money Smart curriculum for each class they attended. Findings based on perception of knowledge before and after taking the class showed the majority of the participants (82%) made significant improvement in their desire to change the following personal money management behaviors, compared to only 22% before the program began: build a relationship with a financial institution, develop and keep a spending plan, implement a savings plan, decrease spending, understand their credit history and how to make a credit card work for them, determine the right loan for their needs, know what they are borrowing before they buy, and access their readiness to buy a home. They increased their knowledge significantly about their rights as banking consumers, how money can grow when you save, differences between types of savings and investment accounts, how to order and read a credit report, the different types of consumer installment loans, the different mortgage programs and the basic terms used in a mortgage transaction. In 2005, the Financial Literacy Coalition of Central Texas (FLCCT) trained 29 new volunteer instructors. Trained volunteers are one of several types of volunteers who help extend the Texas Cooperative Extension Family and Consumer Sciences educational program to the public. The Financial Literacy Coalition of Central Texas (FLCCT), administered by the Texas Cooperative Extension of Travis County, implemented one Financial Literacy train-the-trainer program in San Marcos, Texas and invited the surrounding counties' Extension offices (Travis, Hays, Caldwell, Bastrop, and Comal) to participate in the program. Sixteen volunteers from Hays County, eight from Travis county, three from Caldwell County, one from Bastrop county, and one from Comal county participated. To date, 101 volunteers have completed training with 39 Austin volunteers actively involved in teaching classes. A total of 21 volunteers are actively

involved in teaching classes in the other counties, Hays, Caldwell and Bastrop. 36% of the volunteer instructors are bilingual and present the lessons in Spanish. The Austin volunteer instructors contributed over 5,000 volunteer hours to the program. As a result of 3 years of community outreach education and the support of numerous partnerships, the FLCCT received a 501(c)(3) status in May 2005. The partnerships included: Frost Bank, Consumer Credit Counseling Services of Austin, Texas Appleseed, Choice Investments, Texas Department of Insurance, El Buen Samaritano, Caritas of Austin, Foundation Communities, Randolph Brooks Federal Credit Union, Accion USA, University Federal Credit Union, Travis County Employee Wellness Program, Austin Habitat for Humanity, Manos de Cristo, Grant AME Church, Glad Tidings Hispanic Ministry, American Youthworks and Grove Place Apartments.

Building Fiscally Fit Families. The focus of this program in Harris County (Houston, Texas) was to assist families to establish and maintain financial well-being through individual consultation, group methods, short-course, newsletters, seminars, exhibits, information on the web site, involvement and collaboration of task force and community leaders. 10,756 people participated in the program, 748 were contacted to evaluate the program and usable information was received from 401 respondents. The findings showed that:

- 94% had learned new information
- 50% had learned new information for training others
- 77% learned new methods of saving money
- 48% learned new methods of tracking savings
- 66% learned new methods of planning bill paying
- 59% learned new methods to control spending
- 76% stated that their habits towards savings and credit had improved

Plane State Jail Inmate Distance Education Program. Program outcomes were reported by Harris County (Houston, Texas) on the financial management component of an Inmate Re-entry Life Skills Program to prepare women to handle challenges they will face upon their transition into the community.

- 34% indicated that they learned the concept of budgeting
- 47% indicated that they learned how to set financial goals
- 43% learned new methods of saving
- 28% stated that they learned new methods of tracking savings
- 77% stated that they learned new methods of planning bill paying
- 44% stated that the learned methods to control spending
- 37% indicated they learned new ways to stretch their food dollar
- 43% indicated they learned about credit reports and how they are used
- 44% indicated that they learned how to establish, manage and repair credit
- 40% indicated that they learned how to safeguard and prevent identity theft.

Dames and Dollars Educational Series. Financial literacy was identified as a Potter County TCFF issue in 2004. Previously, a local financial planner contacted Potter County Extension in 2003 because he believed many females take a passive role with family financial matters and are disadvantaged when faced with divorce or widowhood situations. To assist

females in becoming more knowledgeable in financial areas, a six lesson educational series entitled 'Dames and Dollar$' was offered in 2004. Women attending the series requested as a follow up that additional programs be offered. The Money Matters Task Force comprised of a banker, consumer credit counselor, attorney, librarian and extension agent, developed an educational series entitled Dames and Dollar$ for 2005 that would address how females could become more knowledgeable about credit reports, credit scores and the impact that both have on their creditworthiness for future financial situations. The Dames & Dollar$ education series consisted of six lessons including the following topics: 'Basic Money Management' (managing your money with goal setting, dealing with financial stressors, credit reports and credit protection plans); 'Calculate Your Credit Score' (factors affecting a person's credit score); 'Consider the Consequences' (real life impact from credit scores-jobs, insurance and credit rates); 'Comprehend Your Report' (learning to read and understand your credit report); 'Identity Security: Keep Up Your Guard With Your Card' (identity theft); and 'Your Part in a Fresh Start' (effect of bankruptcy and ways to clean up credit history). One hundred and twenty-six different individuals attended the program; 36 individuals who attended two or more programs received a post survey to complete and return; 17 completed both the pre and post surveys and 5 completed the post surveys only. Courtesy of a joint $1000 corporate sponsorship by 2 local banks, participants were allowed to order credit reports which included a credit score for $10 (typically they are $16.50 each). Twenty-eight credit reports were ordered by participants. Those individuals who participated throughout the series were refunded the initial $10 investment. Thirteen refunds were issued to participants who attended at least 5 of the 6 lessons. Three major areas that participants were surveyed included financial management, credit and identity theft. A paired samples T-test of the 17 completed pre and post surveys indicated a highly significant increase (at .0001). The average pre-test scores were 15.4 and post-test were 20.1. The most notable behavior changes in the participants at the end of six months were those reporting that they had requested a credit report and knew their credit score within 50 points, organized their financial records, no longer carried their social security cards with them at all times, increased frequency for budgeting, and written goals. Respondents reported securing a credit report within 6 months time (16 out of 17), knowing the total amount of their debts (16 out of 17), learning their credit scores within 50 points (14 out of 17), 5 of the 17 who earlier carried their social security cards with them at all times are no longer doing so as a result of the series, and 4 of the 17 who were providing their social security numbers when asked at the beginning of the series are no longer providing it while only 1 of the 17 still continues to give the same information. Bankers, attorney and consumer credit counselor served on task force will each conducting an educational program. Librarian provided the program facilities and marketing/promotional efforts to support program. Extension coordinated the series, developed and administered the evaluations and summarized the data to be used in interpretation events.

Workforce Investment. In Johnson County, Extension collaborated with the Cleburne Workforce Center to conduct weekly seminars on job skills and career transitions. In 2004, the weekly seminars had a total attendance of 773. Seminars from January through March were conducted as preparation for a major Jobs Expo in early April, which drew over 600 job seekers, 29 volunteers, and 17 employers; 313 job seekers completed evaluations indicating that 100 job seekers received at least 1 job offers at the Jobs Expo, and 80 job seekers not receiving offers at the Jobs Expo were invited to personal interviews at a later date. A total of 146 were requested to submit a resume. Potential economic impact to the community of this Expo is estimated to be $1.248 million based on 100 new jobs at an average wage of $6 per hour.

Families Moving Ahead. This curriculum was revised by Texas Cooperative Extension to replace the original TCE curriculum, "Building Self-Sufficient Families." A new website was developed which makes it possible for trainers to download educational materials they need to conduct training workshops for participants. In Bexar County, a train-the-trainer training was held for 40 attendees whose evaluation forms revealed that they found the budget information, worksheets, visual materials, and a website helpful in their work in case management. Trainees used the website 77 times to download forms and seek additional information. A second programming effort in San Antonio was the Family Alliance Council training that reached 200 people. Conference evaluations from 126 indicated that the professionals gained knowledge of new resource and referral sources. As a result of the training, staff of the Bexar County Health and Human Services Division have changed the curriculum taught by co-workers to the more than 1,200 families that seek assistance annually.

Welcome to the Real World Program. Bell County youth participants in this simulated learning program about money management completed an evaluation of the program which demonstrated that 57% learned how to explore career possibilities, 46% learned how to open a savings account, and 75% learned how to balance income and expenses. Feedback from parents indicated the course was a valuable introduction to career exploration for their children.

Financial Planning for Higher Education Costs. In Zavala County, educational efforts addressed the importance of financial planning for higher education costs, taking advantage of financial gains from 4-H animal projects. With the assistance of parents, financial planning professionals and the financial contributions from the private sector, 30 new higher Education Savings Accounts were established by Zavala County youth in 2004. Prior to this program, there were only 11 such accounts established by 4-H Youth who participate in the Zavala County Junior Fair Animal project auction sales. The 30 accounts represent an almost 50% increase in accounts.

NEFE High School Financial Planning Program®. The High School Financial Planning program is evaluated through a national impact evaluation. The study showed that young people who studied the curriculum for as little as 10 hours significantly increased their understanding of money management and improved their financial behavior in ensuing months, suggesting that even relatively limited exposure to financial education can impart significant, lasting and practical financial knowledge to young people. Childress County Extension educator conducted a pre- and post-test of students' knowledge of basic financial terms related to insurance, credit and investments. With usable evaluation data from all 75 participants, the pre-test score average was 56, but post-test score average was 75. The High School Financial Planning Program was used as the teaching resource.

Better Living for Texans. The Better Living for Texans (BLT) program has a series of 5 to 6 lessons that included a component on food resource management. During the 2002-2003 program year, BLT was conducted in 226 lead counties across Texas and reached 175,885 direct educational contacts. Audience composition was 35% Caucasian, 15% African American, and 49% Hispanic. Results from a statewide telephone survey administered to 381 individuals revealed that more than 55.4% reported that their food stamps were lasting longer after they started to participate in BLT programs than they had prior to participating in BLT. Eighty-eight percent reported that they compared prices "always or most of the time" after participating in BLT, compared to 40.4% of the time before participating in BLT, thus being able to feed families nutritious foods in a more economical manner. [Note: See complete report in the State TCE-TAES Plan of Work Program 7: Better Living for Texans.]

Financial Readiness Program. Army families have met many challenges this year and hardships that can create financial burdens. Extension has responded with the Financial Readiness Program by providing classes that have helped prepare soldiers and their families for deployments and the financial hardships that it can create. Extension has also prepared and presented budgeting classes for the family members left at home to assist them with financial concerns. Agents at Ft. Hood continue to train Ft. Hood personnel to teach financial responsibility to soldiers and their units. Agents at Ft. Hood and Ft. Bliss also provide basic financial education as a part of the 1St Termer program, an educational program to help new soldiers and their families get started on the right financial track. Agents at both installations also provide educational programming on budgeting, insurance, and protection against scams.

Operation READY. Through funding from Department of Army – U.S. Community and Family Support Center, the curriculum known as Operation READY is under revision. These materials prepare soldiers and families for all aspects of family readiness during deployment, including financial readiness. Texas Cooperative Extension originally developed the materials in 1992 and has been performed each major revision.

Summation of contact data for 2005 indicate that:

- 64,606 contacts were served by group methods
- 143,405 contacts were served by individual methods
- 340,474 contacts were served by direct methods through Better Living for Texans
- 188,306 contacts were served by mass media (newsletters)
- 77,536 contacts were served by volunteer leaders

- 814,327 contacts served through Better Living for Texans, Financial Readiness Military, High School Financial Planning Program, Consumer Education Programs, Home Buyer Education, and other specific targeted financial management education programs

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 9, Financial Management Education.

C. Sources of Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

Multi-State Extension – HSFPP Program – All States
BLT - WS, OH, CO
Financial Security in Later Life (national initiative) - All States

State TCE Plan of Work Program 10: Parenting and Child Care
Key Theme: Parenting, Child Care/Dependent Care

A. Description of Activity

Changes in family life over the last several decades have influenced the ability of family members to adequately address the needs of children and aging adults. Families need access to research-based educational resources and training programs to assist them in their job of raising responsible citizens. According to recent statistics, over one-fourth of today's children reside in single-parent households, where they are much more likely to experience poverty (Forum on Child & Family Statistics, 2005). Nearly five million infants, young children, and teens live in households headed by a grandparent. Over 20 million children are currently living apart from their biological fathers. Researchers have found that children who grow up with absent fathers are at a greater risk for poverty, school failure, child abuse, suicide, criminal behavior, emotional and behavioral problems, early sexual activity, and drug and alcohol abuse. These risks diminish substantially when children grow up with an active and loving father in the home (Horn & Sylvester, 2002).

Child maltreatment rates in the U.S. remain extremely high. Recent statistics indicate that an estimated 906,000 children were found to be victims of child maltreatment in 2003, with the majority falling under the category of child neglect (63%) (National Clearinghouse on Child Abuse and Neglect, 2005). Nearly 84% of substantiated child maltreatment cases occurred at the hands of a parent or parents. In Texas, 224,010 children were alleged to be victims of child abuse or neglect in 2004. In that same year, 50,529 were confirmed victims (Texas Kids Count Annual Data Book, 2005). Parenting programs that provide education and skills training to parents covering a variety of topics (e.g., child development, communication, nutrition, health and safety, etc.) have been demonstrated to be effective in reducing child maltreatment rates (Bloom, 1996; Reppucci et al., 1997; U.S. Department of Health and Human Services, 2001; Willis et al., 1992).

As families have changed over the last several decades, so has the demand for quality child care. According to labor statistics, 65% of women with children younger than 6, and 78% of women with children ages 6 to 17 are currently working outside the home. Over 60% of children from birth through age 6 (not yet in kindergarten) received some form of child care on a regular basis from persons other than their parents (Forum for Child & Family Statistics, 2004). The Texas Workforce Commission estimates that there are over 100,000 child care providers caring for more than 760,000 children under the age of 13 in licensed or regulated child care facilities in the state of Texas (Texas Workforce Commission, 2003). Having a well-trained child care workforce is essential to providing the high quality child care that children need to develop physically, socially, emotionally, and cognitively.

Texas Cooperative Extension's Family Development and Resource Management Unit is committed to providing educational programs to support and strengthen Texas families. In the areas of parenting, child care, and dependent care, Texas Cooperative Extension offers a wide range of programs and resources to citizens across the state. Programs and resources include train-the-trainer workshops for professionals and volunteers, multi-session parent education workshops, 1-2 hour lectures, satellite and other distance education workshops, self-study child care training guides, internet resources (e.g., online child care courses, fact sheets, research briefs, trend data, links to juried websites), and newsletters. In addition, over 300 programs

related to parenting, child care, and dependent care can be accessed through Extension's Educational Resource Library at Texas A&M University.

B. Impact of Programs

Performance Goal 5.2.1: To annually increase the incidence of caring communities resulting from non-formal education programs in which CSREES partners and cooperators play an active research, education, or extension role.

Child Care Worker Training Programs. In the state of Texas, there are over 23,000 licensed or regulated child care facilities (child care centers, family day care). Child care is the 16th largest industry in the state, generating over 145,000 jobs and $2.3 billion in wages for Texans (Texas Workforce Commission, 2003). Current and/or prospective child care providers, managers, and early childhood educators can enhance their knowledge and skills related to the care and education of children through regional child care conferences, county workshops, online courses, satellite trainings, newsletters, and self-study courses. Providers completing the above programs can acquire the necessary annual training hours and continuing education units determined by the Texas Department of Family and Protective Services (TDFPS).

Dependent Care Programs. Texas has the fifth largest population of older adults in the United States. Texas Cooperative Extension has developed numerous programs and resources to assist professionals, family members, and older adults in making decisions about quality dependent care. Programs include regional eldercare conferences, Project Oasis (a program designed to train older adult volunteers as paraprofessional mental health counselors to work in nursing home settings), workshops on fall prevention, Alzheimer's disease, health, nutrition and safety for older adults, and inter-generational programs involving 4-H and other youth.

Indicator 5.2.1d: The total number of child care/dependent care providers completing non-formal education programs.

Target audiences for child care programming include adults and teens providing care for children birth through age ten in family, center and school-aged settings. Target dependent care audiences include adults and teens providing care for adults and children who are unable to provide some portion of care for themselves due to illness or age-related disabilities. Programs and resources are accessible to target audiences regardless of gender, marital status, family status, race/ethnicity, income level, or educational level. It is estimated that 70% of this audience falls under the category of "low-income."

	Child Care	Dependent Care
Providers attending classes	9,774	26,536
Individual contacts	18,682	15,827
Contacts via newsletters & self-study guides	16,567	48,614
Volunteers trained	341	873
Individual contacts by volunteers	5,498	12,566
Individuals attending volunteer led programs	3,576	16,905
Totals	**54,438**	**121,321**
Combined Total	**175,759**	

Indicator 5.2.1e: The total number of dependent care providers completing non-formal education programs who plan to adopt one or more new principles, behaviors, or practices after completing one or more of these programs. (See below)

Indicator 5.2.1f: The total number of dependent care providers completing non-formal education programs who actually adopt one or more new principles, behaviors, or practices within six months after completing one or more of these programs. (See below)

Selected Highlights

Dependent Care. Texas Cooperative Extension, in partnership with the Texas Department of Aging and Disability Services, the Texas Legal Services Center, the Area Agencies on Aging of Texas and the Texas Kincare Taskforce, continues to provide education and support to grandparents rearing their grandchildren. Extension sponsored or helped coordinate conferences and workshops on a variety of topics (e.g., establishment of support groups; legal, social, health, nutrition, education, and child care issues) in Dallas, El Paso, Fort Bend, Nueces, and Wilson Counties. In addition to the support that Extension offers through the Grandparents Raising Grandkids internet site (http://grandparentsraisinggrandkids.tamu.edu), County Extension Agents were responsible for the formation of support groups in counties around the state. Extension has received grant funding from the Rio Grande Council of Governments- Area Agency on Aging, Dallas County Area Agency on Aging, City of Dallas/Senior Affairs, and the Dallas AARP to support its work with grandparents rearing their grandchildren.

Child Care. In 2005, Texas Cooperative Extension conducted 13 major single- or multi-county child care conferences resulting in the training of over 3,000 child care providers from more than 40 Texas counties. Providers at these conferences received over 12,000 clock hours of credit, helping them fulfill state-mandated training requirements. In addition to these face-to-

face trainings, county Extension agents across Texas reached over 16,000 providers with research-based newsletters and self-study programs that address critical issues related to the care of children.

Performance Goal 5.2.2: To annually increase the incidence of strong families resulting from non-formal education programs in which CSREES partners and cooperators play an active research, education, or extension role.

Parent Education Programs. Texas Cooperative Extension offers a wide range of programs and resources to support parents, and professionals and volunteers who work closely with parents. County Extension agents, in collaboration with local partners, led multi-session parent education workshops, 1-2 hour training seminars, and disseminated a wide variety of parenting information via fact sheets and newsletter articles. Topics include fathering, teen parenting, grandparents raising grandchildren, teasing & bullying prevention, discipline, early childhood education, self-esteem, early brain development, and nutrition for infants, toddlers, and school-age children. In addition to agent delivered programs, resources are made available to parents and professionals on the Family and Consumer Sciences website.

Indicator 5.2.2a: The total number of people completing non-formal education programs on parenting.

Parenting Education Contacts	
Individuals attending parenting classes/programs	20,779
Individual contacts (e.g., phone, e-mail, office)	37,770
Contacts via newsletters & self-study guides	34,889
Volunteers trained in parenting programs	976
Individual contacts by volunteers	8,780
Parents attending volunteer led parenting programs	10,044
Total Contacts	**113,238**

Indicator 5.2.2b: The total number of people completing non-formal education programs on parenting who plan to adopt one or more parenting principles, behaviors, or practices after completing one or more of these programs. (See below)

Indicator 5.2.2c: The total number of people completing non-formal education programs on parenting who actually adopt one or more parenting principles, behaviors, or practices within six months after completing one or more of these programs.

Selected Highlights

Fathers Reading Every Day (19 Texas counties). Over 1,000 fathers/father figures and children from 19 Texas counties participated in the *Fathers Reading Every Day* (FRED) program in 2005. Approximately 600 fathers and children completed all aspects of the four-week program. Results from a 2005 study of 245 adult program participants revealed significant improvement from pre to post in a number of areas, including the amount of time fathers spent reading to their children, number of books read during a typical week, level of involvement in their children's education, amount and quality of time spent with their children, and level of satisfaction with the father-child relationship. When given a chance to express their agreement or disagreement with a series of statements related to the program, fathers reported the following:

- 60.4% reported that FRED "Increased the time I spent with my child."
- 62.9% reported that FRED "Improved the quality of the time I spent with my child."
- 71.4% reported that FRED "Helped me become more involved in my child's education."
- 60.0% reported that FRED "Led to improvements in my child's vocabulary."
- 54.7% reported that FRED "Helped my child learn to read."
- 64.5% reported that FRED "Increased my satisfaction level as a parent."
- 62.4% reported that FRED "Improved my relationship with my child."

In open-ended responses, many fathers indicated that they noted improvements in their children's vocabulary, reading ability, and interest in books as a result of participating in FRED. Some fathers even noted improvements in their own literacy skills. A few representative quotes are listed below:

[Participating in the FRED program] "helped improve [my child's] reading ability and vocabulary. It also got me to read more, increase the time I read, and improve the quality of time."

"Thoroughly enjoyed it [participating in FRED]. My husband is in the military and it helped to make [the] transition easier."

"Got us to read books together. [My child] read to me and was very excited to be able to read to me and her siblings."

[The thing I liked most about FRED was the] "short time frame, but long enough to develop a reading habit we will continue."

[The FRED program] "increased my awareness that my child deserves more of my attention."

[The thing I liked most about FRED was] "that we spent more quality time on an educational level.

Parenting Along the Border (El Paso County). Ninety-four parents from El Paso County participated in multi-session parent education classes in 2005. An analysis of completed pre- and post-test surveys revealed that the parenting classes had a very positive effect on specific

parenting practices. Paired t-tests indicated significant improvement from pre to post in a number of parenting behaviors, particularly in the areas of parent-child communication, parental self-efficacy (i.e., parental self-confidence), parental involvement, use of positive disciplinary practices, and parental encouragement to engage in increased physical activity as a family.

Content covered included: child development, nutrition for the young child, communication, discipline, self-esteem, and health and safety issues.

Parents who attended parenting classes:

- Were more confident in their parenting skills
- Complimented, encouraged, & praised their children more frequently
- Criticized their children less often
- Communicated their expectations to their children more clearly
- Made a greater effort to listen carefully to their children
- Set and enforced limits more consistently with their children
- Became more involved in their children's child care and/or school-related activities
- Relied more on positive disciplinary/guidance techniques (e.g., using timeout, redirecting children's behavior)
- Were more likely to include physical activities as part of their family time

2005 Building Strong Families Conference (Lubbock). 811 parents participated in the 10th Annual Building Strong Families Parenting Conference held in Lubbock, TX. Parents were able to select from 30 sessions dealing with a variety of parenting issues. Conference evaluations were done on site with participants, exhibitors, speakers, facilitators and BSF Board. Comments indicated that the conference was extremely helpful to participants. Evaluation data from the follow-up will be available in early 2006. Participants at the conference came from very diverse backgrounds, including 48% Hispanic/Latino.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 10, Parenting and Child Care.

C. Source of Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

TCE: State Specific
TAES: None
Integrated research and Extension - This integrative program combines staff from TCE (Extension) and the Texas Department of Health (TDH), Baylor College of Medicine, Texas Department of Protective and Regulatory Services, and numerous county level

collaborations. Extension staff include: five specialists and numerous agents working in Food and Nutrition as well as Family Development and Resource Management. Staff from support agencies include: licensed nurse, county nurses, caseworkers, licensing agents, and faculty.

State TCE Plan of Work Program 11: Life Skills Education Development
Key Theme: Youth Development

A. Description of Activity

Youth issues were identified by Texas residents as a high priority for Extension programming. Nationally, youth related issues include Weight Management, Harmful Substance Abuse, Teen Sexuality, Accepting and Respecting Others, Youth Violence, Unsupervised Time, Youth Literacy, and Death by Accident. During 2004, Texas Counties identified a number of youth related issues which strongly parallel national concerns.

Texas 4-H offers nine areas of program delivery to meet the needs of a diverse state with complex issues. A comprehensive urban plan includes faculty from the 20 most populated Texas counties who work cooperatively toward a consistent program directed to serve the needs of urban youth. Furthermore, focused efforts are directed toward traditionally under-served clientele and accommodations were made to meet the needs of the disadvantaged.

Texans Building Character,4-H Leadership Development , Workforce Development and Entrepreneurship, Conflict Resolution, Technology Education, Building Community Inclusion through Diversity and 4-H Curriculum Development through Texas 4-H Project Teams were addressed. Curriculum was aligned to meet the Texas Essential Knowledge and Skills (TEKS) as identified by the Texas Education Agency (TEA). During 2005, TEKS components continued to be valued within 4-H curricula as TEA has moved toward requirements for Texas schools to assess the knowledge and skills (TAKS) gained by youth. Internal and external linkages were formed with numerous agencies, including: Civic and Community Organizations, Extension Program Council, Family and Community Education Groups, Juvenile Probation System, Parks and Recreation Departments, Universities, Schools, Corporations, Philanthropy Foundation, and other youth serving agencies as appropriate to this performance goal.

B. Impact of Programs

Texans Building Character was initially brought forward through special initiative funding. Character Education was identified by Texas residents, during the most recent Texas Community Futures Forum, as a high priority of need for Texas children and parallels the national concern of accepting and respecting others and concern for youth violence. In 2004, 153,526 youth participated in Character Education project work followed by comparable numbers in 2005. Distinguishable results from around Texas are discussed below.

During 2004 members of the Gonzales Youth Center were invited to take part in the Texans Building Character Series. Youth learned what it means to be responsible. They learned to not lie, cheat, steal, or show disrespect. During past Extension efforts, Dickens County reported that 90% of their school aged participants indicated an increased appreciation for respectful behavior. During 2005, Moore county youth participated in multiple lessons surrounding Character Education. A new 4-H club emerged as a result and new youth, that otherwise would more likely not have participated in 4-H, were provided opportunities to benefit from the 4-H program.

Being continually mindful of character traits also includes a youth's ability to handle conflict in a civilized manner. In Fort Bend County, a targeted program related to conflict resolution has resulted in new 4-H youth groups being formed in schools. Youth who were

referred to In School Suspension (ISS) for fighting at school were enrolled in the conflict resolution program conducted through 4-H. The description of the youths included those who regularly initiated fights, were disrespectful to teachers, and were truant on a regular basis. Following placement in the class, the local County Extension Agent reported information from the school Principal indicating that the youth were requesting additional conflict resolution classes and wanted to opportunity to meet more than once per week and reported they were overall much happier with their lives.

Strengthening Our Capacity to Care (SOCC) is a program designed to be a prevention and intervention program for first time juvenile offenders. In 2005 over 1400 hours of programming were offered in this program area. As a collaborative effort between TCE and the Juvenile Services Department, this programs goals focus is to reduce the rate of recidivism among first time offenders. Typically, first time offenders, repeat youthful offenders, and youth-at-risk have been involved. Referred offenders parents are required to be involved in Parent Enhancement Classes. The resource "Things Teenagers Need to Succeed" from the SEARCH Institute's work on 40 developmental assets was used to provide the parents the necessary skills to build assets and raise confident, caring young people. Summative evaluation results of the recent county based SOCC projects indicates that only 26% of participating youth have re-offended on any level, compared to the state recidivism rate of 52% for youth. Involvement by both parents and youth increased the youth's participation in positive activities, such as 4-H and workforce preparation. The program also increased the youth's knowledge of specific 4-H projects by applying skills gained to self and family. By participating in these projects, the youth acquired better nutritional attitudes, academic achievement and life skill development (i.e. leadership, volunteerism, and character education). During 2005, in Jasper County, the SOCC project was broadened to include educational programming surround foods and nutrition. Two hundred and thirty two youth were involved. Youth reported significant changes in their snaking habits and improved their overall daily nutritional intake.

In excess of 10,000 Texas youth have participated in a Workforce Preparedness project. During 2005, Texas 4-H and the Family Development Resource Management Unit partnered to secure a grant through the Children, Youth and Families at Risk Program. The Texas CYFAR project is titled: Kidz with Biz Ideaz. The project focuses on the development of job readiness skills and creating an ever mindful climate of entrepreneurship for youth. Over 1000 youth have been involved with the project in the four county sites. Youth have developed concepts for home based business and participated in Entrepreneurship Fairs where they are able to display their wares. An entrepreneurship tour is planned for the summer of 2006 where youth will tour around Texas and visit unique business to give them a practical sense of the opportunity to start a business in their home town. Many small Texas communities are experiencing negative population growth, this increasing the importance for youth to feel the can create a future for themselves.

During 2004, a grant was secured focused toward building a climate of inclusiveness in communities. The program includes seven county sites who are focused toward teaching community groups to be more accepting and inviting to youth with disabilities. The project titled: Building Community Inclusion, was directed to address Texas 4-H's focus on diversity. As a result of the 2004 effort, a new camp in 2005 was started at the Texas 4-H Camping and Conference Center. The camp, called Mission Possible, was focused toward the joint participation of youth with and without disabilities. As a result 18 disabled youth, who otherwise more likely would have never had a positive camping experience, were exposed to 4-

H. Furthermore, training of camp counselors and summer staff related to working with disabled youth has become a staple of the training program.

Texas 4-H also created a state wide Technology team who partners with state faculty to offer more educational opportunities for youth via the web and distance learning. As a result of this effort, over $50,000 in computer equipment has been secured in the form of mobile technology labs for youths use. The youth team has conducted statewide educational workshop for senior adults, as well as their peers. With the societal acceptance of technological use, Texas 4-H launched a web-based advisory system called 4-H VOICE. Twenty-four youth and adult volunteers, as well as Extension employees have been solicited to serve on the advisory think tank. All meetings and correspondence are web-based thus significantly reducing the amount of travel cost and financial commitment from all parties involved.

A leading concern in the nation and Texas is Childhood Obesity. Texas 4-H initiated a program titled: Fun, Fit and Fabulous - Healthy Lifestyle Education. One hundred fifty high school aged youth were intensively trained in the subject matter area with the expectation they would start healthy lifestyle focused project activities in their communities across Texas. Extension faculty have also been invited to serve on school based advisory groups called School Health Advisory Council or, SHAC. The positive opportunity to provide youth educational programming through 4-H has not been missed by schools across the state of Texas.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 11, Life Skills Education Development.

C. Source of TCE-TAES Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

Multi-State Extension – FL, VI, LA, and WS
Multi-State Research – None
Integrated Research and Extension: Texas 4-H has a focused effort of youth research. During 2001, two grants were solicited through the National Science Foundation to enhance research and establish a pattern of funding to enable the creation of a Center for Youth Research. Texas 4-H Faculty are actively involved in University based committees which focus toward building partnerships between Teaching, Research, and Extension. One committee meets monthly to discuss funding opportunities and areas where Extension and Research can partner on projects.

State TCE Plan of Work Program 12: Volunteer Development
Key Theme: Program Development, Youth Development, Community Development

A. Description of Activity

Mobilizing and organizing a strong volunteer base is essential to the mission of Texas Cooperative Extension. TCE has the largest volunteer program of any agency in Texas. But with increasing competition for resources, funding, staff and time, sound decisions regarding volunteer recruitment and management will be crucial to sustaining current programs, partnerships and developing new opportunities.

All research concerning agencies of the future leads us to know that expanding the outreach and programming components through all volunteer efforts is essential. Volunteers are the real heart and hands of many different Extension programs, extending the reach into every community and every neighborhood in Texas. Extension volunteers help people to gain knowledge and skills that will benefit them for life. And, in return, volunteers have the satisfaction of knowing they're making a difference for their friends and neighbors. Much of the work Extension volunteers do grows out of their interests and experiences, but they also receive training from educators from various disciplines. Thus volunteers improve their own skills while helping others.

INVEST: Invest in Volunteers: Extension's Superior Team. Volunteers are one of the most important commodities to Texas Extension. They are important in ensuring that Texas Extension maintains relevance, they help the agency deliver programs, and provide interpretation support to name a few.

Strengthening Extension Advisory Leaders (SEAL). The second Strengthening Extension Advisory Leadership Conference was held in Atlanta, Georgia, October 29-31, 2003. At the end of the conference, states made plans on how to introduce the curriculum with appropriate groups at home. The evaluations were consistently high with 97% rating the conference extremely valuable and an excellent use of their time. A follow-up survey was also used to ask if participants were interested in another conference and to identify topics for additional curriculum development. The respondents overwhelmingly indicated that they would like to have another conference and suggested areas of need for curriculum. These responses clustered around advisory leader's role in program development, development of communication tools, leadership development of advisory leaders, and volunteer management.

Youth Protection Standards. The Volunteer Qualification Task Force in Texas was developed in May of 1997 to review the policies and procedures for recruiting training and maintaining volunteers. The committee included volunteers, County Extension Agents, Specialists and an Administrator. Special focus was placed on the safety of the youth involved in the Texas 4-H Program. In 1990, Myron Johnsrud, Administrator of Extension Service of USDA, encouraged each state to have a policy which defines management practices related to prevention of child abuse and the management of volunteers. Additionally, he asked for screening procedures for salaried and volunteer staff which includes background checks; training on child abuse identification and reporting; and written guidelines for all salaried and volunteer staff who work directly with youth. In 2004, Texas Cooperative Extension completed the three year phase in of all Extension program volunteer working directly with youth. The program continues to qualify new volunteers. To date over 16,000 volunteers have been screened. All criminal background checks are completed through the Volunteer Center of North Texas.

Sewing Master Volunteer. In 2005, over 23 counties continued involvement in MCV training. Rather than a three day training as in the past, statewide efforts were focused on a one day training in utilizing waste textiles in re-fabrication projects. An online Master Sewing Volunteer Training course was developed with one module piloted during the year. The Master Sewing Volunteer (MSV) program involves individuals with sewing expertise who enthusiastically want to learn how to teach others to sew. The program covers 10 topics in pattern and fabric selection, interfacing, sewing equipment, pattern fitting and alteration, cutting, marking, construction and pressing, as well as how to start a home-based sewing business or develop job skills for employment. Volunteers receive training in teaching others and individualized assistance through 24 hours of instruction and then contribute 50 hours of service through the local county Extension office. The program targets individuals with little or no sewing experience and helps the individual develop skills for constructing and evaluating apparel and home interiors products.

Texas 4-H Project Teams. Texas 4-H Project Teams(15) give direction to the youth project work conducted in Texas. Project teams consist of youth and adult volunteers, corporate volunteers, county Extension agents, subject matter specialists and administrators. The main objectives are to provide consistent and specialized support and direction to designated project areas; evaluate existing projects and expand the learning opportunities for 4-H youth; develop a base of current project resources including curricula, training, etc; reflect youth development priorities and competencies through project experiences; and develop financial and human resources for the designated project areas.

4-H Master Volunteer. 4-H Master Volunteer programs empower adult volunteers and have increased the impact through a broadening of available human resources. The key to a successful master volunteer program is primarily centered around a strong volunteer project base. The purpose of the 4-H Master Volunteer program is to (1) teach 4-H project subject matter to members and volunteers in the county, (2) provide support to 4-H members and volunteers, and (3) to give leadership to learning opportunities for members, parents, and volunteers in the county. These master volunteers help 4-H members realize the benefits of developing a sound well-rounded project.

Texas Master Gardener. This program has developed over the last two decades. Master Gardeners are committed to providing high quality educational programs about horticulture and the environment in Texas communities and neighborhoods. A love of gardening and search for knowledge are the catalysts by which Texans from every walk of life enter the program. Master Gardeners are now navigating the worldwide web to extend information delivery and problem solving to Extension clientele. Through web based programs they are assisting in answering thousands of home gardening questions each year. Master Gardeners are certified every two years by fulfilling 6 hours of training and 12 hours of volunteer service.

Urban Plant Detectives The goal of this new and innovative program is to train Master Gardeners to successfully execute and perform simple applied research demonstrations. This program aims to educate the participant in scientific design and methodology and to provide an opportunity to experience the benefits, challenges and joys of performing a research demonstration. Plant detectives are trained for 10-15 hours in basic knowledge of the research subject matter, data collection, mid duration follow up and review and a final debriefing at the end of the project. All data is collected and analyzed statistically. Participants are shown how to interpret the results. The local county Extension agent works with the “detective” to write the research demonstration report and contribute it to the goldmine system.

Projects that have been completed included studies in backyard composting methods, and efficacy of fungicides on foliar disease of roses and crape myrtles. This program relies on donations for the projects which has received over $2500 in materials for the execution of various projects around the Dallas-Fort Worth metroplex area.

Texas Master Naturalist. The mission of this program is to develop a corps of well-informed volunteers to provide education, outreach, and service dedicated to the beneficial management of natural resources and natural areas within their communities. Texas Master Naturalist volunteers receive 40 hours of in-depth training in wildlife and natural resource management, customized to focus on their local ecosystems. In return, volunteers provide at least 40 hours of service in the form of community education and demonstration projects, while pursuing a minimum of 8 hours of advanced training in areas of special interest. Texas Master Naturalist training is provided by educators and specialists from universities, agencies, nature centers, museums, and other organizations that donate their services. The Texas Master Naturalist curriculum is developed by experts and provides a standardized base of knowledge and skills for all volunteers across the state. The Texas Master Naturalist volunteer program is sponsored by the Texas Cooperative Extension and the Texas Parks and Wildlife Department and supported by more than 256 local organizations.

Master Marketer. This program combines three successful concepts –intensive education, master volunteers and leadership of marketing clubs. Producers are trained in advanced risk management and marketing techniques during an intensive program and then extend that knowledge to other producers and may provide leadership for marketing clubs in their home counties. Seven hundred and five producers have now graduated from the Master Marketer Program through 2005.

B. Impact of Programs

INVEST: Invest in Volunteers: Extension's Superior Team. Texas Cooperative Extension's volunteer management initiative was revamped under the Volunteer Steering Committee. The steering committee met in the fall of 2004 to evaluate current volunteer roles, review volunteer models to adopt agency wide, and start to develop a volunteer system more acceptable to today's clientele. Beginning in the fall of 2005, Extension was trained all staff on a new curriculum designed to assist them in managing volunteers. This new approach systematically identifies the County Extension Agent as a volunteer administrator and changes the way that local planning groups are organized. Some of the highlights or changes in volunteer management at the county level are listed below:

- Adoption of the **ISOTURE** model for Texas Extension. This volunteer model helps to support volunteer management because it connects the components of individual volunteer development to an effective management model.
- Defining **volunteer groups**. As the committee reviewed volunteer management models, the first step was to define volunteer groups the agency manages. These included: Leadership Advisory Committees, Program Area Committees, Youth Boards, Associations / Groups, and Episodic Volunteers.
- One major change was the development of a county **Leadership Advisory Board** *(LAB)*. The LABs roles are to provide long term vision for the county program, serve as advocates for the county program by assisting with interpretation of the program throughout the county, and provide support to develop resources for the county program.

- Another change was the implementation a **Youth Board** in the place of the 4-H and Youth Program Area Committee. The Youth Board is designed to be more representative of the total youth development profession at the county level. It will be comprised of other professionals as well as a majority of youth members that will support the county in developing youth programmatic efforts.

Strengthening Extension Advisory Leaders (SEAL) The third SEAL Conference was held in Atlanta, GA on October 24-26, 2005. Fifty-five participants representing seven states in the south region participated in the 2005 conference. This conference was targeted toward advisory group members and Extension educators that are heavily involved in developing and sustaining successful county and or statewide advisory groups. The overall conference objectives are noted below:

Reveal effective strategies for advocacy;
Building advocacy groups that work; and
Embracing the differences in ourselves and each other.

Youth Protection Standards. All TCE employees are receiving training in the area of volunteer qualifications, child abuse prevention, and risk management. Clientele have received this program in a very positive manner. Many volunteers involved in Extension programming have previously been screened by employers, churches and youth organizations.

Master Sewing Volunteer. MSVs are involved in women's prisons teaching skills for personal success with quilting, team work, planning, organization, and providing needed clothing and accessories to single parents, the elderly, and contributing to community heritage. MSVs teach youth and 4-H'ers, serve as leaders, assist in schools, and collaborate with a variety of organizations and agencies, such as housing authorities, community action groups, and Head Start. They conduct sewing camps, demonstrations, and recruit other individuals to contribute to the social value of the community. In addition to knowledge and sewing skills, the Master Clothing Volunteer program gives clients self-confidence and a sense of worth that they can complete a worthwhile project. The Texas MSV program serves as a resource to other state's Extension organizations through its innovative use of sewing, textile and consumer skills and community partnering to reach committed volunteer.

Texas 4-H Clothing Board. This project team has shown that sewing stimulates creative expression and self esteem for kids. 4-Her's develop required skills, patience and learn to make something by hand that carries a great meaning when made and given away. In addition, youth learn to teach sewing skills to others. In 2004, this team sponsored 4-H Hope Totes. Members sewed 3,418 tote bags and filled the totes with toiletries, books, crayons and other needed items. Totes were given to shelters, children's homes, nursing homes and to adults in need. The value of youth volunteer contributions is over $17,000.

Texas 4-H Livestock Master Volunteers. A total of 102 4-H Swine Master Volunteers have been trained. More importantly 42 have completed their certification form and required hours. These individuals have provided over 5,794 hours to the program and reached 12,811 people. Their payback hours included such activities as validation committees, educational programs, project supervision, project selection, record keeping, facility upkeep, artificial insemination, breeding and farrowing, Ag. boosters, showmanship clinics, assisting new families, club manager work, judging project shows, and elementary school programs. The certified master volunteers revealed a significant increase in their subject matter knowledge of

the swine industry, their ability to carry out leadership responsibilities, and in their ability to effectively plan 4-H swine project activities.

Texas 4-H Master Sheep/Goat Volunteers have provided over 1,600 hours to the program and reached over 5,000 people. Their payback hours included such activities as project supervision, validation committees, livestock show boards, educational programs, project selection, facility upkeep, showmanship clinics, assisting new families, judging project shows and providing school programs.

In 2006, there is a new five year plan to implement master volunteer training and certification programs in the large animal areas of beef, sheep, swine, goats and horse. These five areas will be hosted across the four regions of the state each year on a rotational basis. These certification programs will build the knowledge base of 4-H volunteers, assist with expanding current project work, extend the resources of the agency and enhance the youth development opportunities of the program statewide.

Texas Master Gardener. This volunteer development program contributes $5.3 million in volunteer service to the State of Texas through its 5,550 Master Gardeners in 110 counties. The economic value of Master Gardener's service expands the human capacity of Texas Extension by 17 percent through educational projects in youth gardening, community beautification, environmental quality, and consumer horticulture.

Texas Master Naturalist. The Texas Master Naturalist program is a partnership between TCE and Texas Parks & Wildlife -- 2005 was the 7th year of this partnership. This award winning program has trained over 2,751 adult volunteers in 27 local chapters since its inception. In turn, these volunteers have committed over 88,000 hours of service for natural resources outreach and local community projects. Through 2005, through this program over 530,840 youth, adults, and private landowners have received education, outreach, or technical assistance. Over 30% of these outreach and education contacts were direct "hands-on" group instruction by Master Volunteers in the field and classroom. A pre- and post- program evaluation conducted during 2003 demonstrated that volunteers increased their knowledge of natural resources by 26.4% as a result of training, and this level of knowledge gain was retained for at least 6 months. According to US Bureau of Labor Statistics, this volunteer effort is valued at more than $3.38 million.

Master Marketer. Participants from the first 14 classes indicated in a 2 ½ year post survey that they are increasing their returns an average of $32,702 per year based on what they had returned. The estimated cumulative returns since the program inception (1996) now approach 97 million dollars. The impact of participating in marketing club activities is currently being evaluated. Master Marketer graduates have been involved in the formation of over 75 marketing clubs since the beginning of the program. Each club started is expected to have a finite life of 1 -2 years, however, a number of the clubs choose to continue operating.

Outputs/Outcomes

Texas Cooperative Extension - 2005 Volunteer Development

- 196,716 Volunteers Trained
- 2,109,274 Individual Contacts by Volunteers
- 998,289 Attendance at Group Methods Conducted by Volunteers

- **$682,561,242 million Value of Volunteer Time**
  Source: Bureau of Labor Statistics, Independent Sector, 2005 Data.

Strengthening Extension Advisory Leaders (SEAL) A retrospective evaluation strategy was implemented to the participants at the conclusion of the program. Thirty-five of 55 participants responded to the survey. The survey consisted of four components. These components included an intention to change measurement, a perceptual knowledge change, customer satisfaction, and open-ended response section. The results are noted below.

Intentions to change measurement. The first component reveals the intentions of participants to return home and implement the practices learned during the process. The results are displayed in bullet form below:

- **27 of 27 (100.0%)** said they intend to return home and implement practices learned on "Marketing the Fundamentals." Two noted they had already adopted.
- **26 of 26 (100.0%)** said they intend to return home and implement practices learned on "Communicating with Policy Makers." Two noted they had already adopted.
- **24 of 24 (100.0%)** said they intend to return home and implement practices learned on "Committees: The Advisory Council's Workshop." Four noted they had already adopted.
- **23 of 23 (100.0%)** said they intend to return home and implement practices learned on "Building Sustainable Extension Advisory Councils." Four noted they had already adopted.
- **23 of 23 (100.0%)** said they intend to return home and implement practices learned on "Leading Teams." Four noted they had already adopted.
- **22 of 22 (100.0%)** said they intend to return home and implement practices learned on "Programming Techniques & Skills." Five noted they had already adopted.
- **12 of 12 (100.0%)** said they intend to return home and implement practices learned on "Personality Traits of Leaders." Two noted they had already adopted.
- **12 of 12 (100.0%)** said they intend to return home and implement practices learned on "Motivating Others." Two noted they had already adopted.
- **9 of 9 (100.0%)** said they intend to return home and implement practices learned on "Character and Ethics in Leadership." Three noted they had already adopted.
- **24 of 26 (92.3%)** said they intend to return home and implement practices learned on "Communicating Impact of CES Programs." Two noted they had already adopted.
- **11 of 12 (91.7%)** said they intend to return home and implement practices learned on "Communicating with Different Cultures in Communities." Two noted they had already adopted.
- **23 of 26 (88.5%)** said they intend to return home and implement practices learned on "Role in Annual Budget Process." Three noted they had already adopted.
- **9 of 11 (81.8%)** said they intend to return home and implement practices learned on "Creating an Organizational Vision." Three noted they had already adopted.
- **15 of 30 (50.0%)** said they intend to return home and implement practices learned on "Building Sustainable Advisory Systems." One noted they had already adopted.

Knowledge change. The second section asked about the perceived knowledge increase of participants based on the information taught at the 2005 SEAL Conference. The results are below:

Table 1. Mean score differences using a Likert scale[1] to reveal knowledge changes using a retrospective post evaluation strategy.

TOPICS	N	Before the Meeting	After the Meeting	Mean Change
Communicating with Different Cultures in Communities	13	2.77	3.85	***1.08***
Creating an Organizational Vision	13	2.62	3.69	***1.07***
Personality Traits of Leaders	11	2.82	3.82	***1.00***
Role in Annual Budget Process	26	2.73	3.62	***0.89***
Building Sustainable Extension Advisory Councils	25	2.68	3.56	***0.88***
GENERAL SESSION – Building Sustainable Advisory Systems	35	2.23	3.09	***0.86***
Leading Teams	25	2.80	3.64	***0.84***
Motivating Others	11	3.00	3.82	***0.82***
Communicating Impact of CES Programs	27	2.89	3.63	***0.74***
Committees: The Advisory Council's Workshop	25	2.84	3.56	***0.72***
Marketing the Fundamentals	27	2.85	3.56	***0.71***
Programming Techniques & Skills	25	2.92	3.60	***0.68***
Communicating with Policy Makers	27	3.07	3.74	***0.67***
Character and Ethics in Leadership	11	3.18	3.82	***0.64***

[1]Likert scale = 1 - Poor, 2 - Average, 3 –Good, and 4 - Excellent.
[2]Change indicates the mean value difference between the before and after measurement. Blue indicates change of 1.00 or greater, teal green is for change ranging from .99 - .75 and white is for change at .74 or lower.

Customer Satisfaction. The third section asked about the overall satisfaction of the conference.

- **30 of 31 (96.8%) participants said they were mostly or completely satisfied with the conference overall.**
- **34 of 35 (97.1%)** participants said they were mostly or completely satisfied with the *knowledge level of presenters on the subject*
- **34 of 35 (97.1%)** participants said they were mostly or completely satisfied with the *instructor responses to student questions*

- **33 of 34 (97.1%)** participants said they were mostly or completely satisfied with the *user friendliness of the information*
- **33 of 34 (97.1%)** participants said they were mostly or completely satisfied with the *accuracy of the information*
- **33 of 35 (94.3%)** participants said they were mostly or completely satisfied with the *quality of course materials*
- **32 of 35 (91.4%)** participants said they were mostly or completely satisfied with the *location of the activity*
- **32 of 35 (91.4%)** participants said they were mostly or completely satisfied with the *timeliness of information (in time to be useful)*
- **31 of 35 (88.6%)** participants said they were mostly or completely satisfied with the *helpfulness of the information in decisions about their own situation*
- **31 of 35 (88.6%)** participants said they were mostly or completely satisfied with the *range of topics covered offered*
- **30 of 35 (85.7%)** participants said they were mostly or completely satisfied with the *completeness of information given on each topic*
- **18 of 35 (51.4%)** participants said they were mostly or completely satisfied with the *newness of the information*

Conclusions. The conference revealed positive results from participants related to intentions to utilize materials, knowledge level, and overall satisfaction. As advisory leadership continues to be a priority for the Extension agencies in the southern region, it is imperative that we build competencies in Extension managers, faculty, and most importantly, our volunteer base.

Youth Protection Standards. Many resources have been created to support this program those include: reference guide, electronic presentations, videos, and Spanish translation of enrollment forms and information. This program has screened and qualified 10,000 volunteers to date. These individuals are involved in all Extension disciplines and programs in a direct volunteer role. A 7.3 % red flag rate has occurred as a result of the criminal background checks. This is slightly higher than the state average for red flag**s** regarding volunteer background checks.

Master Sewing Volunteers. In its 13th year, the program continues to attract volunteer interest both in and out of Texas. Within 23 Texas counties implementing the MSV program 2005, 313 group trainings were held. These individuals have made over 6,273 contacts while repaying their 50 volunteer hours. MSV's conducted meetings reaching 7,802 volunteers through group and individual sessions.

Individuals are taught how to sew, mend, alter, or purchase quality family clothing. Some have taught quilting—a heritage art. Some volunteers and clients have started their own businesses or obtained jobs related to apparel construction because of the MSV program. Innovations in fiber and textile production, engineering, computer technology, machine embroidery equipment and computer-assisted design (CAD) are creating a plethora of opportunities for skilled individuals to achieve business success with sewing knowledge.

Texas 4-H Project Teams. The Texas 4-H Clothing Board (project team) has 49 members, 27 adults (7 of these are college students who were on the board as teens and elected to stay on as adult members) and 22 4-Hers ages 14-18. For many years they have been an exemplary project team setting the standard for other.

The Tech Team is a newer 4-H and youth project team. The goal of this group is to create and promote a diversity of youth program opportunities. In addition the make up of this volunteer driven team is one of collaboration among the military, corporate executives and University of Texas at San Antonio. Early involvement has created several volunteer advantages including HP computers being donated to the Texas 4-H Center and statewide marketing through the revamping of the Texas 4-H web site. In 2005, additional donations of $40,000 in computers, cameras and software were made, piloted a new 4-H Roundup contest and conducted educational sessions at seniors' events and Ambassadors training.

Texas 4-H Clothing and Textiles Project: Lorina sewed on Saturday and nearly finished the shirt to her outfit. I was so proud of her as she showed patience I have not ever known her to have. She did very well." Mother of 9 year old member

The Texas 4-H Livestock Master Volunteers. Three key groups support the education of youth and adults in the swine, beef, sheep and goats. These project teams give direction to youth leadership tours, master volunteer trainings and support and other learning strategies. These groups are comprised of youth and adult volunteers, Extension faculty, commodity groups and key donors. The certified swine and goat master volunteers revealed a significant increase in their subject matter knowledge of the industry, their ability to carry out leadership responsibilities, and in their ability to effectively plan 4-H swine project activities.

4-H Swine Master Volunteers.

- 50% change in knowledge of swine industry
- 48% increase in ability to carry out leadership responsibilities as a volunteer
- 54% increase in ability to better plan 4-H Swine Project activities.
- 32% increase in ability to lead others
- 36% increase in ability to adjust to new situations.
- 22% increase in ability to work well with others.
- 20% increase in ability to work independently.
- 22% increase in conflict resolution.
- 44% increase in knowledge level that the 4-H Swine Project provides a safe, wholesome product for consumers.
- 36% increase in the understanding of how to follow labels carefully for feed additives, and drug or chemicals used in the swine project.

Master Marketer. Seven hundred and five producers have now graduated the Master Marketer Program through 2005. Currently, 37 marketing clubs are still active. Recent surveys of mature marketing clubs revealed producers are not only gaining knowledge through their participation in marketing club activities, but are also improving their bottom line. More than 400 producers responded to the survey and indicated they had increased their returns an average of $12,399 annually based on the knowledge they had gained through participation in a marketing club.

"Since attending the program, we have achieved a much higher price for each commodity... We have been able to lock in cost of production while benefiting from upside potential through the use of cash, futures, options and basis management." Glen Rod, El Campo, Texas.

"...using the knowledge of price protection through hedging opportunities in our operations, I've been able to increase our profits by an average of $70,000 a year over a six-year period." Dale Hughes, Vernon, Texas.

"Because of the Master Marketer Program, I now look at the market every day and not just when I have a crop in the bin to sell." Bob Thorton, East Bernard, Texas.

"I am no longer 'reacting' to the market's ups and downs but 'acting' in a controlled manner based upon market signals at the time, while using the proper tools to accomplish my goals." Keith and Michele Orsak, Edna, Texas.

"Overall, I anticipate the skills developed in the Master Marketer Program to increase my profit by 25 percent." Leo Holloway, Abilene, Texas.

"The Master Marketer class gave us the confidence to take advantage of marketing opportunities as they occur. In one particular year, we were able to increase our farm income from grain sorghum by $10,000 by the use of put options." Brian and Natalie Borchardt, Tulia, Texas.

Master Naturalists. By 2005, 75,000 acres of Texas habitat were impacted through land management activities and practices by volunteers. Additional impacts include 50 miles of NEW interpretive trails, over $126,000 secured for local chapter projects and educational efforts, and chapters were recognized with 19 local, state, national and international awards and recognition. A pre- and post- program evaluation conducted during 2003 demonstrated that volunteers increased their knowledge of natural resources by 26.4% as a result of training, and this level of knowledge gain was retained for at least 6 months.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 12, Volunteer Development.

C. Sources of TCE-TAES Federal Funding

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

Multi-State Extension - OK, AK, LA, MS, AL, TN, KY, VI, WV, NC, SC, GA, FL
Multi-State Research – None
Integrated Research and Extension

State TCE Plan of Work Program 13: Partnerships and Collaborations
Key Theme: Community Development

A. Description of Activity

During 2005, Texas Cooperative Extension conducted many successful educational programs which were expanded via partnerships and collaborations. Historically, these partnerships and collaborations have been with citizen groups, other universities, other agencies and key stakeholders. The Texas Community Futures Forums were conducted in 2004 in all 254 counties with key input from many of these partners.

Emphasis is being given to groups with interest in community, youth and family concerns. Special attention will be devoted to traditionally under served sectors. Care will be given to meet the needs of the disadvantaged.

269,960 Number of Participants Reached
*25 % of Participants Under served
*This is an estimate based upon the lack of a specific date in this particular area.

Extension activities (focused on Youth, Volunteers and Community Leaders) worked to learn how to form successful partnerships. Extension, communities and school developed opportunities for collaborations.

89,970	Number of Participants Served by Group Methods
103,786	Number of Participants Served by Individual Methods
3,759	Number of Volunteers Trained
72,445	Number of Contacts by Volunteers

Linkages were made with numerous organizations including Volunteer Leader Organization of Texas, National Guard, Texas Education Agency, U. S. Department of Energy, Coalition of Valley Families, Texas Department of Transportation, Child Protective Services, Boys and Girls Clubs, YMCA, Junior Achievement, Texas Home Buyers, Chamber of Commerce, Farm Bureau, Habit for Humanities, Food Bank, Promotoras Collaboration, Fort Hood, African American and Hispanic Service Organizations, African American and Hispanic Business Organizations, African American and Hispanic Faith-based Organizations, Historically Black and Hispanic Colleges and Universities, Communities in School, American Cancer Council, U. S. Fish and Wildlife Services, Workforce Commission, Majority Minority Public Schools, Civic Organizations, Parent - Teacher Organizations, County Tax Appraisal Offices, Master Gardeners and Clients, Texas Jr Simmental Simbrah Association, Girls Clubs, Sea Green Apartment Homes, Commissioners Courts,1st National Bank of Byers, Legend Bank of Henrietta, Wells Fargo Bank of Henrietta, 1st American Bank of Henrietta, State Farm Insurance, Clay County Farm Bureau, Clay County Memorial Hospital, Texas Cancer Council, Henrietta Fire Department, Texas State Troopers, Clay County Sheriff's Department, Little Wichita Soil & Water Conservation District Board, Clay County Natural Resource Conservations Services, Clay County Farm Service Agency and Board, Henrietta ISD, Petrolia ISD, Byers ISD, Midway ISD, Bellevue ISD, KLUR Radio Station, 1st Ag. Credit, Institute for

Health Education and Research, Inc., Red River Farm Co-op, Tony's Seed and Feed, Gainesville Livestock Market, Martindale Feed Mill, North Central Texas College, Mike Graves Farm and Ranch, Muenster Milling, Alflex Eartags, GNB - Muenster, Lone Star Land Bank, Dallas County Community College District, Texas Nursery and Landscape Association (TNLA), Lewisville ISD Outdoor Learning Area, Old Settlers Elementary, Argyle Junior High, Denton County Youth Fair, Denton North Branch Library, Denton Parks and Recreation Department, Highland Village Elementary, Oak Grove UMC, Dallas Home and Garden Show, Bayless-Selby House, Flower Mound Library, Financial Literacy Coalition of Central Texas, Graham Regional Medical Center, Upper Trinity Regional Water District. March: Elm Fork Chapter Texas Master Naturalists, LISD Outdoor Learning Area, Clear Creek Natural Heritage Center, Hagermann National Wildlife Refuge, DFW Cares, Pilot Point Post Signal, Collin County Camp, Project Feeder Watch, Denton Senior Center, Heard Museum Blue Bird Monitoring Program, Tree City USA, Indian Tree Project, and Keep South Lake Beautiful, El Paso Community College, El Paso Zoo, Pink Elementary, Summer Food Program, Walk With Me, Fort Bend Alliance, HHSC, Pregnancy Resource Center, Adult Protective Services, Head Start, McAuliffe Elementary, Burton Elementary, Agribusiness Association, USDA Natural Resource Conservation Service and Hamilton/Coryell Soil and Water Conservation District, South Texas College of Law, Career and Recovery Resources, Accolade Home Health, Northwest Home Builders Association, The Colony Parks Board, North Texas Tree Specialists, Flower Mound Environmental Services Department, Heard Natural Sciences Museum, Bob Jones Nature Center, Clear Creek Natural Heritage Center, City of Denton Parks and Recreation Department, LBJ National Grasslands, Downing Middle School Butterfly Garden, New Mexico State University, The Harbor Children's Alliance and Victim Center Hospital Districts, Extension Program Councils, Family and Community Education Groups, Arm volunteers and other youth serving agencies as appropriate to this performance goal.

B. Impact of Programs

As funding becomes scarcer it is more and more important to combine efforts in order to meet the needs of the citizens, and make the efficient use of the dollars given to us by stakeholders, the legislature, and grantees or benefactors.

Examples include:

Passenger Safety. The Passenger Safety Project (PS) Texas Cooperative Extension, in cooperation with the Texas Department of Transportation, provides valuable traffic safety information and education to people throughout Texas. The goal of the project is to reduce motor vehicle fatalities and injuries and their associated costs.

All team members are certified child safety seat technician/instructors. Two team members are also certified TCLEOSE (Law Enforcement) instructors. This level of expertise allows PS to conduct child safety seat checkup events and NHTSA certification trainings, whereby individuals become nationally certified as child passenger safety technicians and instructors. Three, 32-Hour NHTSA Child Passenger Safety Technician Certification Trainings have been conducted and 64 technician candidates have been trained.

The primary focus is parents and care givers of young children in rural Texas as well as safety advocates dedicated to child passenger safety issues. Care is taken to meet the needs of traditionally under-served areas of Texas. In 2005, 1,013 group meetings on child passenger

safety seats were held. Almost 18,000 people were contacted via these group meetings. Additionally, 101 volunteers were trained. These volunteers contacted another 1,040 individuals.

Collaborations are with other agencies, both in-state and out-of-state. Included in collaborations are the following agencies: Texas Department of Transportation (TX-DOT); National Highway Traffic Safety Administration (NHTSA Region 6); Texas Department of State Health Services (TDSHS); Texas Department of Public Safety (DPS); Texas Transportation Institute (TTI); Texas Engineering Extension (TEEX); Texas Municipal Police Association (TMPA); Regional Advisory Councils (RAC); Local and Statewide Law Enforcement; Local and Statewide Fire Departments; Local and Statewide EMS Professionals; Statewide Health Professionals; and Texas Department of Regulatory Services , Child Protective Services. The project distributed 19,188 resources and incentive items to support occupant protection. The project's two Rollover Convincers were viewed by over 157,450 participants.

Texas Cooperative Extension Military Programs. Texas Cooperative and the U.S. military have worked hand-in-hand to meet the needs of Texas families since 1987. Extension staff assistants are employed at both Fort Bliss and Fort Hood to provide vital single point-of-contact service to the military community. The following is a list of programmatic areas of importance to the military program:

- Family Advocacy Program
- Army Substance Abuse Program
- Financial Readiness.
- Exceptional Family Member Program
- Mobilization and Deployment
- New Parent Support Program
- Victim Advocacy
- Prevention Extension
- Family Member Employment
- Child/Spouse Abuse
- Parenting
- Relocation Readiness
- Employment Readiness
- Domestic Violence Awareness
- Information and Referral

Operation Military Kids - On-going 4-H clubs exist on six military bases in Texas with more than 6,000 members. "Purple Camps" or Texas 4-H Military 4-H Stars and Stripes Camp was held with 142 youth of deployed solders from all branches of service. Also, a state-side military conference was help with 32 participants representing Army, Air Force and Extension. Speak Out Military Kids Leadership workshop/lock-in was conducted to promote successful joint programming with County Extension Offices and Military Installations.

Financial Literacy - Financial literacy programs, such as Texas Jump$tart. Real World, Money Smart, All My Money, and Kidz with Biz Ideas reached youth, parents, senior citizens, prison inmates, and under served citizens. 223 volunteers were trained. These volunteers reached 4,899 people. County Extension Agents conducted 292 group meetings reaching 5,299. Individually, another 8,378 Texans were taught financial literacy. A specific example in Travis

County was 827 people were taught financial literacy by 166 trained volunteers in 95 literacy classes.

Ag. Literacy - more than 200 counties held Agricultural Literacy programs in collaborations with schools and youth centers. These programs are know as "Pizza Ranch", "Burger Farm", "Kids Kows and More", "Egg to Chick", "Farm Day", Farm Safety Day and many other local names. Teachers and other adults are trained to provide these educational experiences. More than 350,000 youth are reached with this important topic, since agriculture is extremely important to the future of Texas.

Collaborators for Agricultural Literacy include school districts, Chambers of Commerce, Ag. Product and Equipment dealers, Commissioners Courts, master volunteers and agriculture producers.

Texans Building Character. Extension initiated the Texans Building Character (TBC) program based on needs identified in 209 counties in the Texas Community Futures Forum. This program addresses character issues through educational programming based on seven learning models: 4-H, school, youth at risk, livestock, workforce, sports, and community. Since 1999, over 600 county Extension agents have participated in training to implement the TBC programs in their communities.

As Texas communities have recognized the need for character building programs in their communities, over 7,596 volunteers have joined Extension agents to deliver character education programs to over 365,699 individuals in Texas. Another 74,000 contacts were made via newsletters.

Sixty-eight counties reported efforts and training in Quality Counts! - project that emphasizes quality assurance and ethical behavior in the 4-H livestock projects

Do Well, Be Well with Diabetes^{SM}. There are 920,000 Texans diagnosed with diabetes, 137,197 of whom are uninsured. An additional estimated 440,512 Texans have diabetes, but they have not yet been diagnosed. *Do Well, Be Well with Diabetes*^{SM} is an educational program to help people with type 2 diabetes learn the skills they need to understand and manage their diabetes, to reduce their risk of complications and to attain their highest possible level of wellness.

People with diabetes must learn how to manage their blood glucose because failure to do so results in a higher risk for complications, and is costly for the individuals, their families, employers, the health care system, and the state. Because of poor access to health care, medications, supplies, and self-care education, people without health insurance are more likely to have complications.

Fathers Reading Everyday (FRED). FRED is being implemented in 46 Texas counties. Over 600 fathers, grandfathers, and male mentors and nearly 700 children from Head Start, Early Head Start, Even Start, elementary schools, and churches have participated in the FRED program. Results from counties that have implemented and evaluated FRED using the pre and post instrument show that participants spent an average of 9.2 hours reading with their children and averaged 39.6 books over the four-week period

Walk Across Texas. Walk Across Texas is a Texas banner program that promotes health and fitness by challenging and organizing teams to "Walk Across Texas." Contacts in Texas reached 86,170. Volunteers were trained at the number of 1,295. These Walk Across Texas volunteers reached 38,035 individuals. Partnerships and collaborations include local faith-based groups, local and county libraries, hospitals, health clubs, school districts, civic groups, commissioners courts, Extension education groups, 4-H clubs, and other youth groups.

Better Living for Texans (BLT). Better Living for Texans is a contract from the Texas Department of Human Services to teach food stamp and WIC recipient's nutrition. In 2005, there were 204,533 direct teaching contacts made on this partnership. In addition, 5,273 volunteers were trained who, in turn, reached 42,990 individuals. Collaborations and partnerships with this program include, but are not limited to, Texas Department of Human Services, WIC, local school districts, local civic groups, local media, American Dietetic Association, faith-based groups, community centers, health fairs, Vista, and county commissioners' courts.

4-H After School - 4-H after school clubs were started in more than 30 counties involving more than 11,546 youth as new 4-H members. Partnership efforts were with Junior Achievement, YMCA, Boys and Girls Clubs, and JC Penney. Private sector grants totaled more than $40,000. Teams of volunteers, after school providers, Extension agents and Extension specialist were trained in Extension all 12 districts. A 180 educational curriculum was designed and introduced called "Yea 4-H". Regional training were also held to implement this curriculum.

Besides more than 11,000 new 4-H members, 40,622 volunteers, parents, teachers, and youth professionals were reached in group meetings. Another 21,272 were involved in individual contacts. 1,520 volunteers were trained. These volunteers reached an additional 19,343 Texans.

Texas Rural Development Council. Partnerships with over 20 state and local organizations and agencies resulted in the development of the highly successful Texas Rural Leadership Development Program. This program has been implemented in over 63 counties throughout the state in a collaborative effort with the local service providers such as investor-owned utilities, cooperative utilities, USDA-Natural Resource Conservation Service-Resource Conservation and Development boards, local governments and economic development organizations resulting in more local residents becoming more knowledgeable, effective leaders in elected/appointed and unofficial capacities generating and guiding initiatives that create more economic opportunities for rural Texans.

Partnership with the Lower Colorado River Authority in the Texas Leadership Institute has provided over 1000 local leaders from over 40 counties comprising their service area with enhanced training in economic development, grant acquisition and management, infrastructure development, strategic planning and service provision.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 13, Partnerships and Collaborations.

C. Source of TCE-TAES Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

TCE: State Specific

State TCE-TAES Plan of Work Program 14: Community Development
Key Theme: Community Development

A. Description of Activity

Stakeholder input provided by over 10,000 Texans in all 254 counties of the state through the Texas Community Futures Forum indicate that issues associated with development of their communities are pervasive and a very high priority. Specific issues include concerns about individual, community and regional economic viability and maintenance of a high quality of life.

B. Impact of Programs

Programs are basically designed to increase the capacity of targeted Texans to respond to rapidly changing socio-economic forces that affect their community economy and quality of life through increasing understanding of these forces and potential responses. Specific programs targeted at engendering and fostering home-based and micro-enterprises, support for identification and realization of entrepreneurial opportunities in agriculture, forest and other natural resource industries; development of tourism and recreational opportunities for local economic benefit; and community leadership training. Target audiences for the program consist of residents, elected and appointed officials, leaders and potential leaders, existing and potential business owner/managers in and around the over 1200 communities in all 254 counties of the state.

Coordination and cooperation with the following greatly facilitates implementation of educational programs on a state and local basis: Texas Rural Development Council, Office of Rural Community Affairs, Texas Department of Agriculture; Texas Department of Economic Development, Councils of Government, USDA-FS, RD, NRCS; Small Business Administration, Lower Colorado River Authority; Investor-owned utilities; Community Colleges; regional universities within and without the Texas A&M University System and many more.

Significant progress has been made in providing education and information to the target audience primarily by enhancing skills, capabilities and capacities of the agency in collaboration and cooperation with others to extend and enhance benefits of the land grant university system to communities throughout the state.

Previous efforts to enhance staff capacity and capability in this critical area are showing results through increased implementation of existing programs with community development county plans of working increasing by 73% from FY2004-2005. Of course, beyond county Extension agent activity, volunteer leaders are recognized as critical to local development efforts. To this end, an innovative, agent-delivered community leadership educational program (Building Connections) has been developed involving multiple disciplines and perspectives to include youth and is being piloted in 13 counties. However, this represents only one expansion of Extension's capacity in this area.

Another critical area is economic development particularly that emphasizing entrepreneurship. Several programs have been developed and implemented to expand and supplement existing efforts. Examples include resources represented by the Texas Center for Rural Entrepreneurship; a statewide summit focusing on agricultural and rural community entrepreneurship involving over 100 leaders in identifying key issues and actions; and a select team obtaining in-depth training in entrepreneurship and e-commerce to build overall

competencies in these areas through regional educational programs. Specific types of entrepreneurial activity are also supported by Extension education. Child care providers not only represent a business in and of itself but also support employment and other business indirectly due to the criticality of adequate child care in today's society. Extension Child Care provider training encompassed 1448 contact hours in group methods, 1505 individual contacts and over 3000 contacts through mass media. Tourism is another high potential area for entrepreneurial activities of various types. Extension educational programs trained 1006 volunteers to deliver hospitality educational programs to local retail providers. Festivals and events are key tourist attractions. Extension educational programs in this area involved almost 2000 contact hours of instruction and 6382 individual contacts. Nature tourism can be an extremely viable entrepreneurial activity contributing to community economic development in Texas. Various related Extension educational programs provided 5761 contact hours of instruction through group methods and 7546 individual contacts. Youth represent the entrepreneurs and businesses of tomorrow. Extension education programs today conveying skills and knowledge needed to support those efforts provided over 1072 individuals with 1479 contact hours in group methods of instruction and involved 1078 other individual contacts. Over 600 individuals were reached through 93 volunteers trained in the are of youth entrepreneurship.

Resources for addressing critical issues such as these are expanded considerably through partnerships one notable relationship being that with the Texas Network of Rural Community Colleges. Texas Cooperative Extension leadership and community planning efforts with the members of this network under the auspices of the Rural Community College Initiative is receiving national recognition as well as establishing platforms for implementation of locally-focused economic development education. A pilot in-depth program series in entrepreneurship and e-commerce is being developed with one community college.

Concrete results from Extension educational programs in community development tend to reinforce success and expansion of effort. Examples include:

- Community leadership programs that result in 75% of participants assuming elective positions in one Panhandle County while in a South Texas County 100% of participants are active as volunteer leaders after 1 year.

- E-commerce business development programs that show 72% of businesses receiving training enhance marketing through initiation and/or improvement of web sites in a West Texas County.

- Efforts in natural resource-based entrepreneurial enterprise development have resulted in one county having income from wildlife recreation double over 5 years and in another county over 8,000 acres were made available for fee-based wildlife viewing.

- Other educational programs expand impact across multiple counties such as efforts contributing to establishment of a $17 million catfish co-op benefiting producers in 3 coastal counties.

- One county acquired $300,000 in local and state resources to support implementation of an enterprise facilitation process that is targeted at and will generate new businesses and economic opportunities for its residents.

- Applied research in a northeast Texas county inventorying workforce development assets identified strengths and weaknesses in that support system for economic development. One opportunity noted contributed to location of a community college branch campus in the county with groundbreaking to occur in 2006.

These specific illustrations demonstrate potential outcomes that derive from linking broad-based community planning and support research and education with specific, targeted assistance enhancing high probability economic development strategies.

Response to Major Emerging Issues
Disaster Response 2005

Although not part of the 2005 Plan of Work, three major disasters necessitated direction of significant educational resources in response. These were Hurricanes Katrina and Rita and drought-induced wildfires in West-Central Texas.

Of course, prior to Hurricanes Katrina and Rita, Texas Cooperative Extension had partnered in the national Extension Disaster Education Network (EDEN) and completed its own state EDEN Web site (http://texashelp.tamu.edu/) and the handbook, *Preparing for the Unexpected.* This facilitated specific responses to these disasters, some of which are enumerated below.

Hurricane Katrina
Agency responses for Hurricane Katrina included:

- Extension information technology specialists from Lubbock and Stephenville headed to Louisiana shortly after Katrina to loan and set-up satellite communication equipment, computers, and a generator-operated mobile-office trailer.
- In urban counties (Bexar, Andrews, Angelina, Travis and El Paso), Extension employees and volunteers assembled and distributed more than 1,000 health kits containing personal hygiene items. For example, more than 400 kits went to evacuee centers at Kelly USA and Windsor Park Mall in San Antonio, where employees and program volunteers also provided assistance with data entry and missing person location.
- In addition to helping displaced individuals, many 4-H clubs collected and distributed food, veterinary medicine, and supplies for thousands of horses and household pets. For example, Extension's Kendall County 4-H members worked with Lone Star Equine Rescue and several businesses to support horse relocation centers in Louisiana and Mississippi. Grayson County 4-H members also assisted horse rescues by donating halters, lead ropes and animal first-aid supplies.
- Andrews County Extension employees worked with Andrews Caring Hands and 4-H clubs to gather baby food, diapers and other items and delivered them to Dallas for distribution to evacuees.
- Angelina County: 4-H clubs handled phones and assisted with the collection and distribution of supplies at the local American Red Cross office. The county 4-H clubs also collected socks and underwear for evacuees, and donated gasoline cards.
- Bexar County: Extension employees, Master Gardener volunteers and 4-H clubs collected food, clothing and bottled water.

- Brazoria County: Extension and the Brazoria County Cattlemen's Association began a collection of "cattle or cash" for rural agricultural families.
- Glasscock County: School supplies for children relocated to Big Spring were collected by the 4-H clubs.
- Harris County: Extension faculty developed an information kit about food safety, nutrition, and household budgeting that was distributed through aid agencies. Staff and volunteers with the Cooperative Extension Program at Prairie View A&M University volunteered at the Toyota Center assisting evacuees with career placement and resume development. Extension and Experiment Station communications specialists also assisted with news information services at the Reliant Park evacuation center. Austin High School students in Extension's Community Teen Leaders and Albright Middle School's Young Leaders in Action each organized a clothing and food drive.
- Harrison County: Extension employees and 4-H clubs cooked and served lasagna dinners to evacuees at the Marshall Civic Center.
- Midland County: Extension employees helped collect a trailer load of hay and livestock feed for animals in Mississippi. Midland 4-H made pillow cases for disaster victims.
- Montgomery: Trails End 4-H Club provided health, school supply, and bedding kits for evacuees, plus sponsored a Game Night for them.
- Moore County: Double D 4-H club members had a diaper drive for infant evacuees.
- Robertson County: Extension's 4-H and Camp Cooley Ranch gathered food, water, clothing and personal hygiene items to fill a 24-foot gooseneck trailer. The supplies were distributed to displaced families in Bremond, Hearne, Franklin, and College Station.
- Travis County: Master Gardener, 4-H, and AmeriCorps volunteers assisted with food and clothing distribution for evacuees located in the Austin Convention Center. 4-H also collected items for children, including blankets, stuffed animals, toys, activity and coloring books, and crayons.

Hurricane Rita

Internal agency preparations for Hurricane Rita included:

- Protective measures at Extension offices throughout the projected hurricane path, from the Valley to Louisiana.
- AWeb site for employee emergency information, which generated offers by 90 employees, representing 161 bedrooms.
- Distribution of news releases and other informational resources for use by county Extension agents.
- Lodging at the Texas 4-H Center in Brownwood, which had 192 beds available for both displaced employees and other evacuees.
- Arrangements for alternate agency headquarters and 24-hour phone coverage at an Extension district center in Stephenville.

Thankfully, all Extension personnel who were in the path of Hurricane Rita are safe, although some are dealing with significant personal hardships in the aftermath. No Extension offices were lost, although some water damage occurred, and offices in seven counties (Hardin, Jasper, Jefferson, Newton, Orange, Trinity and Tyler) were closed by loss of utilities for a prolonged period.

The Extension mission makes it incumbent on the agency to employ its expertise and resources to aid the recovery of East and Southeast Texas. Response teams have planned programs and collected and disseminated relevant information. The team areas of responsibility are:

- Households and families
- Economic impacts on agriculture and business
- Impacts on natural resources
- Animal/livestock health
- External communications
- Information technology

The technology team rounded up and deployed additional computers with Internet access via wide-area-network wireless receivers to the affected area. The roundup also produced four satellite systems for broadband Internet access, which were installed in Newton, Jefferson, and Orange Counties.

External communications activities included:

Media

- News staff contacted all 70 media outlets serving the 17 affected counties and developed a spread sheet to show when and how to best distribute news and other information materials to these outlets; distribution is ongoing.

- Numerous stories were issued and posted to the Agnews Web site (http://agnews.tamu.edu/dailynews/stories/HURC/) which pertain to hurricane preparedness and aftermath (four of these concern Katrina, the rest Rita).

- Some 27 radio PSAs were compiled for ongoing distribution to radio stations. Another seven radio PSAs were voiced in Spanish and distributed.

Publications

- 26 publications on hurricane recovery were adapted and posted on an Extension Web site (http://tcebookstore.org/) by 2 p.m. Friday, Sept. 30. This made it possible for those Extension agents and citizens who still had power to obtain this information immediately. Topics range from dealing with mold and using portable generators safely to disinfecting water and removing refrigerator odors. Of these, 22 publications were bundled into three large booklets: Water – 5 publications, totaling 16 pages; Home – 11 publications, totaling 23 pages; and Safety – 6 publications, totaling 11 pages.

- 67,000 sets of these three booklets were printed locally for distribution to the affected counties. Distribution: 17,000 sets to affected Extension county offices and the other

- 50,000 sets to Lufkin for coordinated distribution through the state's Incident Command Center and the Texas Forest Service to shelters and other locations in each county.

The subject matter teams developed additional resources and made it a top priority to be available in Extension Districts 5 and 9, where county agents received lists of the subject matter expertise of 19 ANR faculty members, 16 FCS faculty members, and three 4-H faculty members. In the natural resource arena, our marine and forestry professionals hit the ground quickly to provide direct support to those industries.

In addition, Texas 4-H took excerpts from the Yea 4-H After School curriculum and prepared "ready to go" activity lesson kits for volunteers to use with youth at shelters. Still underway is a 4-H drive called "Kits for Kids" to collect various school supplies and comfort items to present in packages to children in the affected areas.

To ensure effective management of the Extension response, critical administrators and faculty initiated and continue consultation with Cooperative Extension counterparts experienced with disaster recovery in Florida, North Carolina, and along the Gulf Coast.

Support for Wildfire Prevention and Suppression

In Texas the threat of wildfires prevailed where dry climatic conditions were accompanied by prominent high fuel stores. Texas Wildfires in 2005 numbered 2043, destroyed 138 structures and affected 127,692 acres and engaged the following agencies and organizations: Texas Forest Service, Governor's Division of Emergency Management, Texas Army National Guard, Texas Cooperative Extension, Texas Department of State Health Services, Salvation Army, American Red Cross, Texas Civil Air Patrol, Texas Department of Transportation, local government, professional and volunteer fire departments.

State Priorities:
Protection of life and property
Rapid and effective wildfire response
Firefighter Safety
* Rapid damage assessment
* Maximum public awareness of threat
Note: *****a primary role for Extension

*Texas Cooperative Extension Actions**:***

In response to the Texas Governor's Division of Emergency Management operating at elevated emergency status regarding wildfire vulnerability for Fall/Winter 2005 Texas Cooperative Extension committed its statewide outreach and communications network to disseminate public information and educational resources that support wildfire prevention and suppression.

In coordination with appropriate offices of the Division of Emergency Management and Texas Forest Service (TFS), Texas Cooperative Extension…

engaged Extension Agricultural Communications unit to supplement dissemination of public information via its daily e-mail news service, radio public service announcements, video news releases, and web sites with coordinated planning alongside the information officer of TFS.

- engaged county Extension agents serving all 254 Texas counties to raise public awareness via their local programming and contacts, including newsletters, news columns, radio, and television, and Extension web sites.

- engaged Extension Specialists in the departments of forest science, rangeland ecology, animal science, and family development and resource management, to further highlight wildfire prevention and suppression via their communications channels and curricula at upcoming programs.

- made TFS wildfire prevention and suppression information available for use by volunteers involved in the Extension Master Naturalist program and the Texas 4-H and Youth Development program.

Wildfire Brief #1
Texas Cooperative Extension joined some 25 State agencies in a heightened state of readiness at the State Operations Center (SOC) of the Governor's Division of Emergency Management in Austin. Since that time Extension has maintained daily communications and collaborations by participating in interagency teleconferences and posting Texas Cooperative Extension Agency Situation Reports http://www.txdps.state.tx.us/dem/sitrepindex.htm hosted by the SOC.

Wildfire Brief #2
County Extension agents and Extension specialists served residents and agricultural producers in Callahan, Eastland, Wise, Llano, Cooke, Tyler, Hamilton, and Lamar counties where extensive agricultural damages were experienced and 252 homes destroyed. Extension agents and specialists engaged with USDA-Farm Service Agency County Emergency Boards performing agricultural sector damage assessment reports, sharing research-based landowner wildfire mitigation practices and assisting with emergency needs for livestock hay and feed.

Wildfire Brief #3
Texas Extension Disaster Education Network (EDEN) website, http://texashelp.tamu.edu has been designated at Texas Cooperative Extension official site to help inform both urban and rural residents about how to prepare for and prevent wildfires.

Wildfire Brief #4
County Extension Agents in 254 counties continued wildfire prevention education programs using mass media and public access to alert landowners and rural and suburban families that although recent rainfall has temporarily suppressed wildfire events the threat will continue when dry climatic conditions are accompanied by prominent high fuel stores.

Reporting of Future Efforts
As of the writing of this report several additional actions are underway that will be addressed n the 2006 Annual Report. In addition, an overall approach to these and potential future similar issue is the formation of an Emergency Management Steering Committee to take a proactive, encompassing role in directing Extension educational efforts. The work of this group will impact future plans of work and subsequent reporting.

Texas Agricultural Experiment Station

The Texas Agricultural Experiment Station did not have research programs that complimented or supported TCE in its State Plan of Work Program 14, Community Development

C. Source of TCE-TAES Federal Funds

TCE: Smith-Lever and State Matching
TAES: None

D. Scope of Impact

Multi-State Extension – CO

B. STAKEHOLDER INPUT

Texas Cooperative Extension

The primary process for gaining stakeholder input within the TCE is the use of the Texas Community Futures Forum (TCFF). This process was described in detail in the CSREES State Plan of Work submitted in July 1999. As of this date, information obtained in this process is being used to guide Texas Cooperative Extension in the design and delivery of educational services and programs to address issues raised during this process.

During 2004, all counties in Texas participated in an effort to implement the second formal TCFF process. All 254 counties conducted a grassroots process to identify issues at the local level. In addition, a state-wide electronic survey was implemented as an additional option for local citizens to identify issues. Approximately 6,400 citizens participated in the forums and raised over 2,200 issues.

In the summer of 2004, faculty from TCE came together to study issues from the TCFF process as well as issues raised by other stakeholder groups. To accomplish this 12 regional data summits were held across the state. The purpose of these summits was to understand issues facing our state and develop action plans to address issues of importance. Over 110 action plans were developed during and since the summits. These action plans were used extensively by agents and specialists for the purpose of local, regional, and statewide program planning.

In addition, any individual in Texas may access county plans and reports included in the TCE's Planning and Reporting System. These plans and reports represent work being done by Extension faculty across the state. The plans and reports are directly linked to issues raised in the Texas Community Futures Forum process and are part of most action plans developed in the 254 counties across the state. This open system allows citizens to be fully aware on the programs and services being planned by Extension.

In the Spring of 2005, administration and faculty in Texas Cooperative Extension developed a comprehensive strategic plan and roadmap to guide our efforts. Texas Cooperative Extension is currently in year 02 of our strategic planning efforts.

Another indicator of stakeholder involvement is customer satisfaction. Customer satisfaction results are obtained from 48 randomly selected counties representing the entire state. In these counties, educators administer a standardized evaluation instrument to participants in group educational activities. Data is entered and analyzed at the state level.

Five specific indicators are calculated and reported for customer satisfaction. First, a customer satisfaction index (CSI), is comprised of seven questions that ask participants to disagree or agree with statements about the relevance, timeliness, accuracy, understandability, and helpfulness of the information provided. Using a scale of 1 (strongly disagree) to 5 (strongly agree), ratings are summed and averaged to create a score. Overall, the CSI for FY 2005 was 4.53 or at the 91st percentile. The second indicator is a single question about the overall value of the information and programs provided by Extension. The 1-to-5 rating for this question ranges from not at all valuable to very valuable. The overall value score is 4.38 or the 88th percentile. The next two indicators are referrals to others and intent to adopt practices. Referral to others relates to whether a participant would recommend an educational opportunity to others. Overall, given a yes/no choice, 98 percent of participants in FY 2005 would recommend the programs they attended to others. Participants also are asked if they plan to make any changes based on the information they received. Given a yes/no choice, 69 percent of participants statewide plan to make changes based on the information received. The final customer satisfaction indicator is an instructor index, which was introduced in late 2005. The index reflects participant perceptions of

the instructor's knowledge, preparedness, presentation skills, and responsiveness to questions. Data from this index will be available in our next report.

Finally, Extension Program Councils continue to serve as a conduit to local citizens and their needs. Extension Program Councils include volunteers at all levels of the local program who are involved in issues identification, program development and delivery, evaluation and interpretation of programs, and management of other volunteers. Currently, over 13,000 individuals serve on Extension Program Councils. These volunteers represent all 254 counties in the state.

Texas Agricultural Experiment Station

The TAES Administration, Department Heads and Resident Directors variously met with industry leaders over the course of FY 2004. Groups met with included the Cactus Feeders Association, Inc., National Cotton Council, Plains Cotton Growers, Rio Grande Valley Sugar Growers, Texas Arabian Breeders' Association, Texas Beekeepers Association, Texas Cattle Feeders Association, Texas Citrus Mutual, Texas Citrus & Vegetable Association, Texas Corn Producers Board, Texas Cotton Breeders Association, Texas Cotton Ginners Association, Texas Cotton Producers Association, Texas Grain Sorghum Board, Texas Nursery & Landscape Association, Texas Paint Horse Breeders' Association, Texas Peanut Producers Board, Texas Quarter Horse Association, Texas Rice Improvement Association, Texas Rice Producers Board, Texas Rice Research Foundation, Texas Seed Trade Association, Texas Sheep & Goat Raisers Association, Texas & Southwestern Cattle Raisers Association, Texas Soybean Board, Texas Thoroughbred Association, and the Texas Wheat Producers Board among others.

A special effort was implemented in 2003 and continued referred to as the Texas Beef Industry Round Table. Four regional meetings and a state wide meeting were conducted to determine industry needs, establish priorities, and provide an action plan for TAES and TCE.

TAES has encouraged the public to participate in helping TAES set priorities, assess current program and process effectiveness, and determine future directions. These processes were open, fair, and accessible to encourage individuals, groups, and organizations to have a voice, and treated all with dignity and respect. Stakeholders were initially identified by membership in listed organizations, though all events were public and were announced in the press and other written notice. Input from these events was captured by TAES participants, and in some cases was published for further public use. Stakeholder input has always been critical to TAES processes and programs, and listed events and organizations continue as essential partners in setting the TAES agenda and recognizing and addressing emerging issues. A concentrated effort was done for small grains, corn, sorghum, and cotton resulting in a jointly developed strategic plan.

C. PROGRAM REVIEW PROCESS

Texas Cooperative Extension

TCE Administrative Leaders and TAES Administrative Leaders serve as merit reviewers for the Federal Plan of Work, the Federal Report of Accomplishments and Results, and associated grants and contracts. This leadership team is responsible for the oversight and management of all programs conducted by Extension and research faculty.

This process was described in the CSREES TCE State Plan of Work and the CSREES TAES State Plan of Work, both submitted July 1999. There are no significant changes in the process since that submission.

Texas Agricultural Experiment Station

Significant changes have not been made in the program review process.

D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES

Texas Cooperative Extension

Programs in this report were identified and addressed in the Plan of Work submitted in July 1999. Issues of importance were identified in the TCE and TAES strategic plans for 2000-2004 and 2005-2008. These plans for 2000-2004 and 2005-2008 are based upon issued identified by stakeholders and citizens during the Texas Community Futures Forum held in 1999 and 2004. This process is described in the Federal Plan of Work and is again discussed in this document in the stakeholder input section.

An integral part of educational programming efforts to meet the needs of the citizens of Texas includes serving under-served and under-represented populations. Various programs including those under Goal 3 and Goal 5 address these populations as a major emphasis of the programming. Examples include the Better Living For Texans program, Money 2000, partnership and collaboration efforts, and community development efforts.

Outcome and impact accomplishments are described for many of the planned programs reported on in this report. Accomplishments range from clientele gaining knowledge of specific subject matter areas to increased revenues and the saving of income. TCE outcomes for Year 2005 are expected to be built on for many of the ongoing programs in this report. These efforts, in many cases, are part of ongoing efforts to resolve issues identified in the strategic planning strategy which resulted in the issues identified in the Texas Community Futures Forum

Texas Agricultural Experiment Station

The Projects listed under Part A (Planned Programs) are evidence of the TAES participation and productivity in multi-state, multi-institutional, multi-disciplinary, and joint research-extension projects. Each program addressed the critical issues identified as strategically important by stakeholder input. They also addressed the reporting areas including food security, safety and nutrition. Program progress varied among programs due to the major adjustments required to conform to the federal plan, and to adjust to levels of appropriated funding available and to grants and contracts secured by faculty. The planned programs improved focus, and this should improve further as TAES moves to more fully engage all faculty who work in the program areas.

TAES scientist participated in the following multi-state, multi-institutional, multi-disciplinary, and joint research-education programs in 2004:

Project No	Title	Station
NRSP003	The National Atmospheric Deposition Program (NADP) (from NRSP3)	CA-D, CO, FL, GA, IL, IN, KY, LA, MA, MD, ME, MI, NC, NE, NYC, OH, OR, PA, TX, UT, VA
NRSP004	High Value Specialty Crop Pest Management	AL, AR, CA-D, CO, IA, ID, IL, ME, MI, MN, ND,

		NE, OH, PR, SC, SD, TX, UT, VA, WA, WI, Kentucky Cooperative Extension
NRSP006	Inter-Regional Potato Introduction Project: Acquisition, classification, preservation, evaluation and distribution of potato (Solanum) germplasm	MI, MN, NYC, TX
NRSP007	A National Agricultural Program for Minor Use Animal Drugs	CA-D, FL, IA, NYC, L Garry Adams is Adm Adv (TX)
NRSP008	National Animal Genome Research Program (From NSRP-8)	AL, AR, CA-D, DE, HI, IA, IN, KY, LA, MI, MN, NC, NE, NH, NJ, NM, NV, NYC, OK, RI, SC, TX, UT, WA, WI
NC 170	Mediating Exposure to Environmental Hazards Through Textile Systems	CA-D, CO, IL, MD, MN, NYC, OK, TX,
NC 205	Ecology and Management of European Corn Borer and Other Lepidopteran Pests of Corn (new project)	DE, GA, IA, IL, IN, KS, LA, MI, MN, ND, NE, NYC, NYG, PA, TX, WI, USDA-ARS,
NC 213	Management of Grain Quality and Security for World Markets	IA, IL, IN, KS, KY, MI, MN, MT, ND, NE, OK, TX, WA, WI, BROCK Manufacturing,
NC 1001	Systems Analyses of the Relationships of Agriculture and Food Systems to Community Health	IA, MA, MI, MN, MO, MS, NJ, NYC, OH, PA, TX, WA, California-Santa Cruz,
NC 1003	Impact Analysis and Decision Strategies for Agricultural Research	AL, AZ, CA-B, CA-D, FL, GA, IA, ID, IL, IN, KS, MD, ME, MI, MO, MT, ND, NE, NJ, NYC, PA, TX, VA, WA, WI, USDA-ERS/RED,
NC 1008	Advanced Technologies for the Genetic Improvement of Poultry (was NC-168)	AR, CA-D, DE, GA, IA, IL, IN, MD, MI, MN, NC, TX, VA, WI, City of Hope National Medical Center,
NC 1010	Interpreting Cattle Genomic Data: Biology, Applications and	AR, AZ, BARC,

	Outreach (NC-209)	CA-D, IA, IL, KY, MA, MI, MN, MS, NC, OH, SD, TN, TX, VT, WI, USDA/ARS,
NC 1014	Agricultural and Rural Finance Markets in Transition (NC221, NCT-194)	AL, AR, GA, IA, IL, IN, KS, MI, MN, ND, NYC, OH, PA, SC, SD, TX, Federal Reserve Bank of Kansas City,
NC 1015	Managing Karnal Bunt of Wheat	AR, KS, MN, MO, OK, SD, TX,
NC 1018	Impact of Climate and Soils on Crop Selection and Management (NC094 Renewal)	FL, GA, IL, IN, KS, LA, MI, MN, ND, NE, NYC, NYG, OH, SD, TX,
NC 1019	Control of Emerging and Re-emerging Poultry Respiratory Diseases in the United States (was NC-228)	AL, CTS, DE, IA, IL, IN, MD, MN, NYC, OH, TX, National Animal Disease Center,
NC 1022	The Chemical and Physical Nature of Particulate Matter Affecting Air, Water and Soil Quality. (NCR174)	DE, GA, ID, IL, IN, MI, MN, MO, NC, ND, NJ, NYC, SC, TX, WA, WI, Alabama A&M University,
NC 1023	Improvement of Thermal and Alternative Processes for Foods	CA-D, DE, FL, GA, GU, IA, ID, IL, IN, KY, LA, MD, MI, MN, MO, NASA, NC, ND, NE, NJ, NYC, NYG, OH, OR, PA, SD, TN, TX, VA, WA, WI, Industry Consultant,
NC 1025	Mycotoxins:Biosecurity and Food Safety	IA, IL, IN, KS, MI, MN, MO, ND, NE, PA, TN, TX, WI, Grain Marketing Product Research Center (GMPRC),
NC 1119	Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises (Rev. NC-119)	AZ, CA-D, FL, GA, IA, IN, KS, KY, LA, MD, MI, MN, NE, NH, NYC, OH, PA, SD, TX, UT, VA, VT, WI,

NC 1142	Regulation of Photosynthetic Processes (Rev. NC-142)	FL, GU, IA, IL, KS, KY, MI, MN, MO, ND, NE, NV, OR, PA, SC, TX, WA, WI, USDA-ARS,
NC 1167	N-3 Polyunsaturated Fatty Acids and Human Health and Disease	CO, KS, MI, MN, MO, NE, NJ, PA, TN, TX, WY, North Carolina - University of North Carolina,
NE 1011	Rural Communities, Rural Labor Markets and Public Policy	AR, CO, DE, GA, IA, ID, IN, KY, ME, MI, MN, MO, NC, ND, NH, NV, NYC, OH, OR, PA, RI, SC, TX, UT, VA, WA, WI, USDA/ERS,
NE 1016	Genetic Bases for Resistance and Immunity to Avian Diseases	AL, AR, CA-D, DE, IA, MS, NC, NH, NYC, SC, TX,
NE 1017	Developing and Integrating Components for Commercial Greenhouse Production System	AZ, CTH, GA, KY, NE, NH, NJ, NYC, OH, PA, TX,
NE 1020	Multi-state Evaluation of Winegrape Cultivars and Clones	CA-D, CO, CTH, IA, IN, KY, MA, MD, MI, MN, NE, NV, NYG, OH, OK, OR, PA, SD, TX, VA, VT, WA, California Cooperative Extension,
NE 1022	Poultry Production Systems: Optimization of Production and Welfare Using Physiological, Behavioral and Physical Assessments	AR, CA-D, CTS, DE, IA, IL, MD, MN, NE, PA, TX, USDA-ARS/Mississippi,
NECC 63	Research Committee on Commodity Promotion	AL, AZ, CA-D, FL, GA, IA, IN, MN, MS, ND, NM, NYC, OH, OK, PA, TX, WA, WI, California Department of Agriculture,
S 9	Plant Genetic Resources Conservation and Utilization (S-009)	AL, AR, FL, GU, HI, KY, LA, MS, NC, OK, PR, SC, TN, TX, VA, VI, USDA/ARS,
S 65	Multistate Research Coordination, Southern Region	

S 294	Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits	AL, BARC, CA-D, FL, GA, IA, LA, MI, NYG, OR, PA-ERRC, TN, TX, Agriculture and Agri-Food Canada,
S 295	Enhancing Food Safety Through Control of Food-Borne Disease Agents	AL, AR, CA-D, DE, FL, GA, IA, ID, KY, LA, MI, MN, MS, NC, NE, NYG, OH, SC, TX, VA, WY,
S 300	Mosquito and Agricultural Pest Management in Riceland Ecosystems	AR, CA-D, CA-R, FL, IL, KY, LA, TX,
S 304	Development of Genetic Resources for Cotton	AL, AR, GA, LA, MS, NC, NM, OK, TX, Alabama A&M University,
S 1000	Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture (S275)	AL, AR, CA-D, CO, FL, GA, GU, HI, IA, ID, IL, IN, KY, LA, MI, MN, NC, NE, OH, PA, SC, TX, VA, WI, Southern Research and Outreach Center Waseca, MN,
S 1004	Development and Evaluation of TMDL Planning and Assessment Tools and Processes (S273)	AL, AR, FL, GA, IA, IL, IN, KS, KY, LA, MD, MI, MN, NC, NJ, OK, OR, SC, TN, TX, VA, WVA, Alabama A&M University,
S 1005	Sources, Dispersal and Management of Stable Flies on Grazing Beef and Dairy Cattle (S274)	AR, FL, KS, KY, LA, MN, MT, NE, NM, NYC, TN, TX, Agriculture Canada, Lethbridge,
S 1007	The Science and Engineering for a Biobased Industry and Economy	AR, AZ, CA-D, FL, HI, IA, IL, IN, KS, KY, LA, MI, MN, MS, MT, NC, ND, NE, OK, OR, SC, SD, TN, TX, UT, VA, WA, WI, WVA, Berkeley National Laboratory,
S 1010	Dynamic Soybean Pest Management for Evolving Agricultural	AR, GA, IA, IL,

	Technologies and Cropping Systems (S-281)	IN, KS, KY, LA, ME, MI, MN, MO, MS, ND, NE, OH, TN, TX, VA, WI, CPHST,
S 1011	Water Quality Methodology for Crop Protection Chemicals (S271)	AR, MS, PR, SC, TN, TX, VA, Kentucky State University,
S 1012	Nutritional Systems for Swine to Increase Reproductive Efficiency (S-288)	AL, AR, FL, GA, IN, KY, LA, MN, NC, OK, TX, VA, INIFAP, Campo Experimental Sierra de Chihuahua, Cd. Cuauhtimoc, Chih., Mexico, Hidalgo 1213, 31500,
S 1013	Genetic (Co)Variance of Parasite Resistance, Temperament, and Production Traits of Traditional and Non-*Bos indicus* Tropically Adapted Breeds (S-277)	AR, FL, GA, KY, LA, MS, TX, VI, ARS,
S 1014	Mineral Controls on P Retention and Release in Soils and Soil Amendments (S280)	FL, GA, KY, LA, MO, MS, NC, TN, TX, VA, NRCS,
S 1015	Host Resistance as the Cornerstone for Managing Plant-Parasitic Nematodes in Sustainable Agroecosystems (S-282)	AL, AR, LA, MN, MS, NC, SC, TN, TX, VA, WA, USDA, ARS,
S 1016	Impacts of Trade and Domestic Policies on the Competitiveness and Performance of Southern Agriculture (S-287)	AL, AR, FL, GA, KY, LA, MS, ND, OK, TX, WVA, Missouri State University,
S 1017	Improved Systems for Management of Economically-Important Arthropod Pests Attacking Pecan	FL, GA, KS, LA, OK, TX,
S 1018	Irrigation Management for Humid and Sub-Humid Areas	AL, AR, DE, FL, GA, LA, MO, MS, NAA, NC, PR, SC, TN, TX, VI, Cotton Incorporated,
S 1022	Basic and Applied Aspects of Bacterial Source Tracking	AL, AR, DE, GA, IN, MI, MN, NC, NYC, OK, TX, VA, WVA, Northeastern State University,
W 112	Reproductive Performance in Domestic Ruminants	AK, AZ, CA-D, CO, HI, ID, KS, ME, MI, MN, MO, MT, ND, NE, NM, NV, OH, OR, TX,

		WA, WY, ARS-ID,
W 173	Stress Factors of Farm Animals and Their Effects on Performance	AL, AZ, CA-D, CO, FL, HI, IA, IL, KS, KY, MO, MS, NE, NYC, TN, TX, ARS,
W 1082	Evaluating the Physical and Biological Availability of Pesticides and Pharmaceuticals in Agricultural Contexts (from W082)	AL, AR, CA-B, CA-D, CA-R, CTH, DE, GA, HI, IA, IL, IN, KY, MI, MN, MT, NE, SD, TX, USDA-ARS/MN, WI, Pennsylvania Cooperative Extension,
W 1128	Reducing Barriers to Adoption of Microirrigation	AZ, CA-D, CO, FL, GU, HI, IA, ID, KS, LA, NM, NYC, NYG, OR, PR, TX, VI, USDA-ARS Fresno,
W 1133	Benefits and Costs of Natural Resources Policies Affecting Public and Private Lands	AL, CA-A, CA-B, CA-D, CO, CTS, GA, IA, KY, LA, MA, MD, ME, MI, ND, NH, NYC, OH, OR, PA, RI, TX, UT, WA, WVA, WY,
W 1168	Environmental and Genetic Determinants of Seed Quality and Performance	CA-D, CO, DE, FL, IA, KY, LA, MI, NC, NYC, NYG, OH, OR, TN, TX, VA, Cornell Cooperative Extension,
W 1170	Chemistry, Bioavailability, And Toxicity Of Constituents In Residuals And Residual-Treated Soils	AR, CA-R, CO, FL, HI, IA, IN, KS, MI, OH, OK, OR, PA, TX, VA, WA, MWRD-Chicago,
W 1177	Enhancing the Competitiveness of U.S. Meats	BARC, CA-D, CO, IA, ND, NE, OR, SD, TX, UT, WA, WY, South Dakota Cooperative Extension,
W 1188	Characterizing Mass and Energy Transport at Different Scales	AZ, CA-D, CA-R, CO, CTS, DE, IA, ID, IL, KS, KY,

		MN, MT, ND, NJ, NV, OR, PA, TN, TX, UT, WA, WY, ARS,
W 1190	Interfacing technological, economic, and institutional principles for managing inter-sector mobilization of water	AZ, CA-D, CO, HI, ID, IN, KS, ND, NE, NM, OR, TX, UT, WA, US Bureau of Reclamation,

E. MULTI STATE EXTENSION AND RESEARCH ACTIVITIES

See Attached - CSREES-REPT (2/00) for Multi-State Extension Activities

F. INTEGRATED ACTIVITIES

See Attached - CSREES-REPT (2/00) for Integrated Extension Activities.

See Attached - CSREES-REPT (2/00) for Integrated Research Activities.

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