PROGRAMMATIC GOALS AND OBJECTIVES

Agriculture – Food, Fiber, and Green Industries

Imperative 1: Texas agricultural producers effectively evaluate and adopt research-based technology applications and best management practices for crop and forage systems to enhance their economic competitiveness in the global marketplace.

Statement of Support: Texas agricultural producers must compete globally. This requires rapid adoption of technology-based systems to improve quality and quantity of outputs at competitive costs per unit. Extension Data Summits and Texas commodity association leadership identified educational needs to achieve this goal.

Summary of Educational Contacts for Imperative 1

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,522</td>
<td>60,988</td>
<td>216,212</td>
<td>437,129</td>
<td>498,117</td>
</tr>
</tbody>
</table>

Goal 1: Producers improve their knowledge of agricultural production systems to improve profitability and conserve resources.

Benchmark: At least 50% of producers that were surveyed said they intended to adopt various crop production practices. Common practices included: use of Roundup Ready Flex cotton, new varieties, soil sample methods, and use of herbicides.

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</table>
| Provide science-based, multidisciplinary programs to producers and associated agribusiness professionals relative to technology transfer in crop and forage systems. | 2009–2013: Producers increase knowledge and/or utilize best management practices for crop and forage systems. This includes soil testing, weed identification, Integrated Pest Management practices and tools, plant disease identification and management, management of conventional and reduced tillage systems, improved crop and forage genetics. (OUTCOME) | T Miller  
C Allen  
C Sansone  
D Appel | YES | NO |
| 2009-13: Producer adoption of IPM compatible tools to manage weeds, insects, and diseases will increase. (OUTCOME) | | C Allen  
C Sansone  
D Appel | | |
| 2009–2013: Cow-calf producers will increase knowledge of year-round grazing systems by 5%. (OUTCOME) | | T Miller | |
| 2009-2013: 55% of producers attending educational programs increase their knowledge of irrigation technologies, management of irrigation technologies, and water use efficiency in their production system (crop production per unit of water). (OUTCOME) | | B Lesikar | |
| 2009-2013: 20% of producers attending educational programs indicate a willingness to utilize ET networks and other irrigation decision aids to determine water requirements for crops grown. (OUTCOME) | | B Lesikar | |
| 2009–2013: Producers and commercial operators receive education required to maintain pesticide applicator licenses. (OUTPUT) | | D Renchie | |
Results/Narrative

Lygus Bug Treatment Program
Lygus infesting late-season cotton resulted in as much as a 238 lbs lint/acre reduction in yield. Based on application costs, yield benefit, and loan value, it was estimated that where Lygus were controlled, growers could see as much as $105/acre net return over not treating. Regression analysis indicated that treating Lygus once they reached or exceeded an action threshold of 4 Lygus/6 ft-row prevented significant yield loss and validated the current action threshold for late-season cotton. Additionally, several insecticides were identified that had excellent efficacy towards Lygus, yet would result in minimal disruption of biological control factors that prevent secondary pest outbreaks. If adopted on acreage equivalent to that treated for Lygus in 2007 and infested with Lygus similar to our experiments, the use of alternative insecticides for managing Lygus in cotton could result in a savings of approximately $21 million over doing nothing. In the survey we (David Kerns and Megha Parajulee) conducted of 22 prominent area pest control advisors, before we provided educational materials, they ranked their knowledge of Lygus biology and management strategies (scale of 1-5 with 1=minimum knowledge and 5=maximum knowledge) at a mean of 3.36. Upon the conclusion of the meeting, these same pest control advisors ranked their knowledge at 4.09. Additionally, these advisors were asked to rank (scale of 1 to 5 with 1=poor job and 5=exceptional job) their opinion on how well the Texas AgriLife Extension Service was addressing their Lygus related management issues. The response averaged 4.36. When asked what practices they would change based on what they learned at the meeting, 20% of the respondents indicated that they would consider using a systemic insecticide for Lygus management that would be less likely to cause secondary pest outbreaks, 15% indicated that they would scout more intensely late-season, be more diligent about protecting small bolls, and/or worry less about protecting large bolls. Others indicated that they would consider changing their Lygus sampling techniques. When asked how much they relied on the Texas AgriLife Extension Services action threshold for determining when to treat for Lygus, 78% indicated that they would use it, 16.7% stated sometimes, and 4.2% indicated that they rarely used it.

Integrated Pest Management Program
Agriculture is the primary source of income for residents of Terry and Yoakum Counties, either as the primary producer, the processors or as hired employees. Because of a highly competitive world market, area growers must keep production costs to a minimal while maximizing yields. Educational programs were conducted to provide producers with up to date, unbiased research based tools which promote sound Integrated Pest Management (IPM) practices and maximize yields. The Terry-Yoakum IPM Program Steering Committee provides leadership in conducting educational programs and applied research trials which address the current needs of area agricultural producers. An evaluation was mailed to the Scouting Program participants and IPM Program Steering committee members in October 2008. A total of 21 completed surveys were returned. Questions in the evaluation are geared to document the overall impact (both educational and economic) of the Integrated Pest Management program in Terry and Yoakum Counties. The results are as follows: 43% of respondents (9 of 21) indicated they believe Integrated Pest Management (IPM) reduces their risks associated with crop production; Eleven of the respondents (53%) indicated that IPM practices usually maintain or increase yields while reducing input costs, resulting in increased net profits by a value of $32.75 per acre; all respondents (19 of 19) indicated that they use information or data collected from Extension demonstrations or applied research projects to make changes in your farming operation. When asked to place a value on this information, 4 of 18 (22%) valued the information at $5.00 to 10.00 per acre. An additional 7 (39%) valued the information at over $10.00 to 20.00 per acre. Six additional respondents (33%) valued the information from Extension programs at over $20.00 per acres. Fourteen of 19 respondents participated in at least one Texas AgriLife Extension educational activity during the past year. When asked to place a dollar value on the information gained from these activities, the average of 18 responses was $30.00 per acre. The average value of the IPM Program (overall) to respondents operation including monitoring crop development, pest and natural enemies, conducting applied research and demonstrations and providing educational programs was $37.33 per acre.

Pecan Pest Management
The pecan industry has 174,930 acres (2007 figures) of which 83,030 is improved varieties and 91,900 is native. The Pecan Nut Casebearer is the number one insect pest on pecans, causing an estimated 6% in losses every year for an average of $3.5 million in losses, including insecticide costs. One of the primary activities of the pecan IPM program during the spring was the development of a website to deliver real time information on pecan nut casebearer activity across the pecan belt. During April and May a survey was handed out to producers at county field days to obtain information on the use of and accuracy of the PNC websites. As a follow up to this survey a survey was also delivered to producers at the TPGA conference during the pecan shortcourse. A summary of some of the TPGA survey questions are (68 surveys returned that represent internet to gather information and make pecan management decisions; The primary means in which producers learned about the PNC websites was through Texas AgriLife Extension; 50% of the producers felt the PNC information from the websites was accurate. For those producers that were able to give a dollar value of the online PNC information, values ranged from $15 - $900 per acre with an average of $276.67 per acre or a potential of $48 million dollars in improved control. From the 12 county field days 341 survey returns were collected (not every producer answered every question). From these surveys 182 classed themselves as a homeowner with a few trees, 24 as homeowners wanting to plant pecans, 83 commercial producers, 30 in the Ag business, 15 interested in organics and 25 “other”. From the total returns when asked if they were aware of the online PNC predictions only 46% said yes (157/341). Sixty-one percent (204/322) returns indicated they use a computer to search the web for agricultural information and 97% (320/329) indicated they would use the information they had obtained. During all field days producers were provided handouts and displays (insect collections). When asked if the handouts were useful 99% (328/330) said yes. Returns from commercial producers (83) indicated that 66% (54/81) were aware of the online PNC predictions, 62.2% (51/82) said they use a computer to search for agriculture information, 100% (82/82) said they plan on using the information they obtained during the meeting and 97% (81/83) indicated the handout material was useful.
Pesticide Applicator Recertification
The AES Unit specialists continued to work collaboratively and independently to develop applicator certification and recertification materials, programs, and activities. Four applicator certification manuals were revised during the period. AES specialists participated in more than 40 applicator recertification (Continuing Education) activities in support of CEA sponsored programs.

Precision Irrigation
The Texas High Plains Evapotranspiration Network (TXHPET) system and automated listserv continued to provide advanced, updated, standardized, precision irrigation scheduling and meteorological data on a daily basis throughout FY09. Data and information support were provided for at least 20 federal and state agency research and extension projects. Texas AgriLife Research and Extension at Amarillo, Lubbock, Vernon, Chillicothe, Uvalde, Temple and College Station, the USDA-ARS at Bushland, and West Texas A&M University at Canyon used TXHPET data for research, extension and teaching; applications included meteorological modeling inputs, crop modeling, irrigation scheduling and water resources management.

The TXHPET database, web site http://txhighplainset.tamu.edu/, and associated tools were promoted at producer meetings, county agent training events, Master Gardener classes and other educational events. Through fax (200+ subscribers to daily fax service) and electronic information delivery (600 e-mail listserv and web site downloads daily), TXHPET provides relevant data to promote efficient irrigation management to a variety of clientele. In 2008 and again in 2009, the TXHPET Network disseminated nearly 470,000 pages of irrigation scheduling data; this represented an increase of 170,000 over the previous year, and reflects significant increase in application of the information. Each week, approximately 465 automatic emails with watering recommendations are sent by TexasET.

Peanut workshops address production and salmonella issues:
- Texas AgriLife Extension Service conducted the 6th annual peanut production workshops in the High Plains in Levelland, Feb. 24, and Seminole, Feb. 25.
- The workshops were attended by about 105 producers and industry personnel.
- Updates were provided on all variety market types, irrigation, fertility, and weed control (10 different presentations) in addition to plant pathology updates.
- The timing of the meetings was particularly beneficial as the commodity partners Texas Peanut Producers Board and Western Peanut Growers Association were able to update attendees on their response to the salmonella food safety issue, emphasizing that Texas farmers produce a safe, clean, and healthy product that is nutritionally good for the consumer.
- These flagship Extension peanut workshop programs were also the focus of Texas Farm Bureau Radio Network and Fox radio interviews as well as news releases from the Ag. Communications Department.

Deep Nitrogen Soil Sampling on the High Plains
- Educational efforts in the Texas panhandle and south plains have focused on deep soil sampling for determining N fertilizer needs.
- Working with a local consultant, 200 three foot soil samples were collected from fields to be planted to corn.
- Soil nitrate N ranged from 15 to 187 lbs/acre, with an average of 65 lbs N/acre.
- If N application was reduced by an average of just 50 lb/acre this practice could result in a potential savings of $7.5 million for Texas Panhandle and South Plains corn farmers.

Nitrogen management in cotton
- Enhanced cotton soil fertility educational emphasis was initiated in high plains cotton extension programs in January, 2009.
- Two new nitrogen management publications were generated to provide more in-depth information to producers. The Soil and Crop Sciences departmental publication entitled “Nitrogen Management in Cotton” was developed to help cotton producers better manage nitrogen inputs in cotton.
- A handout entitled “Deep Soil Sampling Equipment” was written to compliment the nitrogen publication. This handout describes the importance of sampling equipment, especially in hard, dry soils.
- Three other publications were also provided to Extension agents in cotton producing counties in the North Region. The additional publications were: 1) Nutrient Management for High Plains cotton; Testing Your Soil, and Sweatless Soil Sampler (OSU Extension publication).
- These publications were sent to Extension agents in late January.
- Soil fertility management issues in cotton were discussed at numerous crop conferences during January, February and March.
- Several hundred hard copies of these handouts at the various meetings.
- These publications and presentations, along with field trials associated with deep N sampling are the basis for an outcome program on N management in cotton.
- It is possible that with significant adoption, fine-tuning N management could save dozens of dollars per acre if not more due to reduced N fertilization, while at the same time providing an important comfort level to producers.
South Plains Soil Fertility Program Initiated for 2009/2010

Due to the high cost of fertilizer and potential increases tied to energy costs, a program to enhance soil fertility management awareness for High Plains producers was initiated. The objectives were to raise awareness of the value of soil testing and to optimize fertilizer inputs in future crops.

- The importance of soil testing and nutrient management were discussed during presentations at winter producer meetings, with several hundred copies of five publications distributed.
- A receiver hitch mounted soil probe was designed and constructed to support deep sampling fields for residual fertilizers. Access to the probe will be provided to CEAs for deep soil sampling demonstrations in cotton fields.
- Based on state wide research, it is anticipated that many producers and crop consultants will adopt deep sampling for N, thereby saving substantial cost for fertilizer inputs.
- Fine-tuning N management through deep sampling typically saves $10 to $40 dollars per acre due to more precise fertilizer application, while providing an important comfort level to producers.
- Initial results from late April, 2009 sampling of 7 irrigated producer-cooperator fields indicated that an average of 27 lbs of residual NO3-N/acre in the 0-24 inch depth could be credited against the overall N requirement for the cotton crop. With N costs currently at about $0.50/lb of N, this could result in a savings of about $13/acre.

Innovations in Weed Management

As part of the 2009 Stiles Farm field day, experiments on two major developments in cotton and sorghum weed management were showcased. One was an inaugural study evaluating ALS herbicide resistant sorghum. This will provide sorghum growers with tools to manage troublesome grass weeds such as johnsongrass, selectively with a broad spectrum of post emergence herbicides. AgriLife Extension is working closely with DuPont/Pioneer to refine recommendations for the use of this technology in Texas sorghum. The other technology that was showcased was Ignite/ Roundup tolerant cotton. This will be a significant tool in the fight against glyphosate tolerant weeds which have started to appear in Texas cotton fields. Ignite is an alternative chemistry that will control weeds that have developed resistance to Roundup. AgriLife Extension is cooperating with Bayer CropScience to develop this technology for Texas cotton growers.

Extension response to freeze injury in wheat

Minimum temperatures well below freezing were recorded over most of the wheat producing regions of the state on March 28 and again on April 6. This was highly damaging to the Texas wheat crop, much of which had was either in the process of blooming or had finished bloom, making it vulnerable to freeze injury. AgriLife Extension was called upon to help producers assess damage in their wheat fields and to make recommendations on best management practices for wheat farmers to minimize economic loss. Crisis meetings were held with Soil and Crop Sciences specialists and CEAs present to inform growers on wheat and oat freeze damage and cropping alternatives. Yield losses were estimated from 0- to 100%, dependent on location and growth stage, with statewide loss estimated at 25%, representing 12.5 million bushels with a value of $12.5 million.

- Agents organized 14 producer meetings attended by 470 farmers.
- Approximately 525 wheat freeze publications were distributed at these meetings.
- Approximately 750 wheat and oat samples were assessed by specialists
- Ninety five wheat fields were examined.
- Thirteen popular print media articles, radio and TV interviews were conducted to provide public information on the disaster
- Approximately 50% of Texas wheat acreage was affected.
- Participants made better decisions, including contacting insurance agents, baling small grains for hay or planting alternative crops due to participation.
- Wheat freeze publications were distributed electronically statewide to CEAs.

In 2005, TAM 105 was the number one planted wheat variety in the Texas Panhandle and upper South Plains, planted on 19.1, and 24.1 percent of the dryland and irrigated acres, respectively. As a result of Extension field demonstrations and educational programming, TAM 111, TAM 112 and TAM 110 , representing 33.3 % of the planted acres in the Northern Panhandle and 311 of the planted acreage of TAM 105. TAM 111 was also planted on 21.5% of the South Plains acreage, or 73.4% greater acreage than TAM 105. If TAM 105 was replaced with one of the recommended Extension varieties the economic impact would be $10.7 million annually. This is based on 2008 harvested acres, $5.00 per bushel wheat, and an average of the increase in yield of recommended varieties over TAM 105 in 2006-2008 variety trials.

Educational programs targeting the major row and forage crop production systems in Texas significantly increased producer understanding of the importance of soil testing and nutrient management. Survey results from the Blackland Growth and Income Conference and other multi-county events showed a 30 to 35% increase in the use of proper methods for timing and placement of fertilizer materials. In addition, adoption of soil testing by producers as a routine best management practice increased by 26%.

Wheat survey conducted

In order to conduct better programming and to measure outcomes, a wheat survey was developed and distributed through the Texas Ag Statistics Service that included grazing practices, grain yields, varieties planted by district, many wheat management questions and use of information resources including AgriLife Extension. This survey will provide guidance for future educational efforts in small grains. Points identified by the survey were: a) 74% of those surveyed rate AgriLife Extension as very important or somewhat important as a source of information in making decisions and b) Well over half of those surveyed say they use Extension information. Of these, 80% use Extension for wheat
variety information and 87% for pest management.

With the rapidly changing seed technology came the need for an expanded and more intensive cotton variety testing effort. With funding support from Plains Cotton Growers, Incorporated - Plains Cotton Improvement Program and Texas State Support Committee - Cotton Incorporated, Extension began conducting intensive replicated cotton variety trials in producer-cooperator fields in 2000. Industry teamwork including funding, local leading producer-cooperators and seed and technology providers provides credibility to the large-plot projects. The testing results allow producers to compare production, quality, and economic characteristics of selected varieties.

- More than 10,000 cotton producers participated in 250 educational meetings conducted by Extension in the High Plains since 2000.
- Over 3,000 hard copies of trial results have been disseminated to producers, consultants and cotton gins since 2001. More than 22,000 requests for these reports have been noted on the Lubbock AgriLife Research and Extension Center Web site. An additional 9,000 Cotton Resource CDs and DVDs have been disseminated to producers, consultants and gins. These CDs and DVDs have provided a total of 57,000 annual report copies to recipients, bringing the total number of reports distributed to more than 80,000 since 2001.

**Economic Benefit**

- Improved seed technology and variety testing efforts have led to significant improvements in both cotton lint quality, and yields in the High Plains. Since 2000, the improved lint quality has resulted in a $0.085 per pound increase in loan value, while average yields have increased from 390 to 860 pounds per acre.
- The economic benefit of these advancements in seed technology, applied research and education were estimated based on improved loan values and yields, adjusted for certain costs associated with these improvements. In 2007, the economic benefit to growers was estimated at $32 million.
- Since 2000, the cumulative economic benefit was estimated at $590 million, which has put growers in a better position to absorb the sharp increases in production costs.

Most of the improved pasture and hay meadows in the higher rainfall areas of the state are planted to hybrid bermudagrass; which, due to its tolerance of drought, high temperatures and response to fertilizer inputs has made it the mainstay of cow-calf operations in eastern Texas and the southern U.S. With high fertilizer prices and low beef prices, this paradigm is not as economically viable as when it was developed over the 1960s through 1980s. With clientele becoming increasingly aware of the high cost of forage production, Extension is gearing up to provide answers. On March 4, Soil and Crop Science specialists, using Centra Symposium technology conducted a training session for 73 county agents, providing information regarding the changing paradigm of forage production associated with increasing input costs, primarily fertilizer. Agents are on the front line of our technology transfer efforts. They are getting increasing numbers of questions from their clientele regarding “What do I do.” This training session provided them the most current information to respond to their producers.

(Reedmon, McFarland)

**Reducing Bermudagrass Fertilizer Input Costs**

With fertilizer prices causing sticker shock throughout the regions of the state dedicated to improved pasture in cow-calf operations, Soil and Crop Sciences Extension faculty initiated field studies to define best management practices to reduce cost of forage production associated with nutrient management. Using some technologies proven successful in nutrient management of field crops, studies were initiated:

- To conduct deep soil sampling (18") to determine whether or not potassium is present in adequate quantities at the lower part of the soil profile to be applied as credits to traditional soil test recommendations.
- To test whether precision placement of phosphorus (P) provides enhanced P uptake for forage production compared with traditional broadcast application strategies.
- To evaluate soil pH of the deeper soil profile to determine if there may be any savings associated with limestone application.
- To quantify strategies that may help reduce fertilizer input costs to bermudagrass pastures and hay meadows.

Redmon, Provin, Fromme, Corriher, McFarland, and C. Jones

A forage management seminar was held for forage/beef producers in Karnes and Wilson counties. Seventy-five people were in attendance. Topic discussed included basic forage management principles, fertility, forage/hay testing, and soil sampling.

Prior to the presentation, only 36% of the participants considered their level of understanding in forage management principles to be in the good to excellent range. Following the presentation, 79% of the participants considered their level of understanding of forage management principles to be either in the good to excellent range. This represents a 119% change in level of understanding when comparing the before and after results.

Prior to the presentation, only 43% of the participants considered their level of understanding in fertility to be in the good to excellent range. Following the presentation, 84% of the participants considered their level of understanding of fertility to be either in the good to excellent range. This represents a 95% change in level of understanding when comparing the before and after results.

Prior to the presentation, only 41% of the participants considered their level of understanding in soil sampling to be in the good to excellent range. Following the presentation, 86% of the participants considered their level of understanding of soil sampling to be either in the good to excellent range. This represents a 110% change in level of
understanding when comparing the before and after results.

Prior to the presentation, only 29% of the participants considered their level of understanding in forage/hay testing to be in the good to excellent range. Following the presentation, 71% of the participants considered their level of understanding of forage/hay testing to be either in the good to excellent range. This represents a 145% change in level of understanding when comparing the before and after results.

Forage-related and cow-calf producer Educational Events for 2008 by Larry Redmon totaled 45 meetings with and attendance of 3,589 emphasizing the value of stockpiled forages compared to conventional hay harvesting. Survey data indicated a 2.5% increase in the number of beef cattle producers adopting new technology regarding the use of stockpiled forage as a substitute for hay during winter feeding operations.

Producers at a Pasture Fertility Management seminar in Smith County had a 36% increase in knowledge and 67% were very likely to adopt best management practices in regards to soil testing and fertility management.

Producers attending a Weed Management seminar in Delta County, 82% plan to adopt best management practices in regards to utilizing herbicides. Of those participants 100% anticipate benefiting economically as a direct result of the seminar.

A forage field day in Cass County resulted in 81% of the producers in attendance planning to adopt best management practices in regards to pasture fertility management and weed management. 92% of those attending producers anticipate benefiting economically as a direct result of the seminar in Cass County. In Rusk County in response to a seminar on utilizing winter pasture, 100% of the attendees agreed that the program would have a positive economic impact on their operation. 64.29% agreed that they planed to incorporate forage legumes into their operation and 65.2% agreed that they planed to have their hay analyzed for quality. 98.18% agreed that they had a better understanding of how warm season herbicides affect their ability to establish cool season legumes and 94.64% agreed that they had a better understanding of how legumes can contribute to their operation following the seminar.

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<tbody>
<tr>
<td>Producers increase knowledge of cropping alternatives and production systems to meet the demands for feedstocks for the renewable fuel industry.</td>
<td>2009 - 2013: Producers increase their knowledge of bioenergy and biofuel crops and cropping systems by 10% annually. (OUTCOME)</td>
<td>T Miller</td>
<td></td>
<td>YES</td>
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<tr>
<td>Producers increase knowledge on cellulosic alcohol to reduce soil losses due to the harvest of crop residues.</td>
<td>2009: Producers will gain knowledge of soil and water conserving production systems for cellulosic crop production by 2% per year. (OUTCOME)</td>
<td>T Miller</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Update Extension enterprise budgets for major crops, alternative production</td>
<td>2009–2013: Enterprise budgets updated and available on the Web for producers and county faculty by January 31 of each year. (OUTPUT)</td>
<td>M Waller</td>
<td></td>
<td>YES</td>
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Results/Narrative

There remains a lot of media play and information on oil-seed crops and the economic potential. However, much of this information is not relevant to Texas farms and can be misleading to clientele. Three Oil-seed Workshops that were conducted at Corpus Christi, Plainview, and Wichita Falls to provide producers, crop consultants, and agency employees with the information necessary (risk management, economics, and production information) to make decisions on selecting, growing, and marketing oil-seed crops. The oil-seed workshops were fully funded by a Southern Regional Risk Management Education grant. Average knowledge gain across all topics was a 61% increase. The economic impact of the workshop is difficult to quantify because we were only providing information to the clientele so that they could make an educated decision on producing and marketing oil-seed crops and mitigate risks associated with their farming operation.

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In FY 2009, 204 Texas AgriLife Extension Service enterprise budgets for major crops and alternative production systems were developed or updated. These enterprise budgets were available and ready for producers, county faculty, and other clientele on the Web by mid-December. The enterprise budgets were viewed a total of 15964 times on the Agricultural Economic web server during FY 2009. A total of 144 crop enterprise budgets (4% increase from FY 2008) and 60 livestock enterprise budgets were available from the 12 Extension Districts which represent a wide range of geographical regions throughout the State.

### Strategy
Expand the use of distance technology to effectively reach producers and associated agribusiness professionals with relevant and timely educational information.

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<td>2009–2013: The number of educational sessions on Extension Web sites increases each year by 3%. (OUTPUT)</td>
<td>P Gibbs</td>
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### Results/Narrative
**Variety testing site takes off**
Perhaps no other input has greater impact on the success of crop production than variety/hybrid selection. Many Soil and Crop Sciences faculty and the affiliated Crop Testing Program spend a significant amount of their time in evaluating crop genetics in field settings and relaying their findings to Extension clientele. The website: [http://varietytesting.tamu.edu](http://varietytesting.tamu.edu) was created in 2004 as a one-stop shop for anyone interested in field crop testing in Texas. Pages downloaded on this website increased from 53,445 in the June-August quarter in 2008 to 174,582 in 2009, or a 327% in a quarter to quarter comparison in 2009.

### Goal 2: Develop and conduct professional development programs for county and specialist faculty to enable them to effectively support educational programs on cropping systems.

**Benchmarks:** Under the leadership of the Regional Program Directors, over 50 professional development trainings were conducted by Departments / Units targeting County Extension Agents.

### Strategy
Work with regional program directors to determine professional development trainings to be offered in each region.

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<td>2009–2013: By September 1 each year, planned professional development opportunities in cropping systems scheduled for the next calendar year. (OUTPUT)</td>
<td>T Miller C Sansone D Appel B Lesikar</td>
<td></td>
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### Results/Narrative
Extension Entomology conducted training at the Entomology retreat. In addition, Extension Entomologists participated as trainers in 6 district trainings across the state from Jan 2009 through Aug 2009.

Irrigation Professional Development credit for CEAs in the North Region.
A professional development workshop on agricultural irrigation was conducted for Texas AgriLife Extension Agents (Agriculture and IPM) on August 13, 2009 in Lubbock, Texas. The irrigation training curriculum and reference notebook developed for the statewide workshop series was provided to the participating agents. Along with this “train the trainer” irrigation education package, evaluation instruments and additional subject matter resources were provided to support local irrigation and water conservation programming. The Subsurface Drip Irrigation Field Days were also approved for Professional Development credit for CEAs in the Texas AgriLife Extension Service North Region. Additional professional development opportunities for County Agents were provided as part of the statewide Irrigation Training Workshop Series, the Subsurface Drip Irrigation Field Days, and the Small Acreage Landowner program.

In addition to special training opportunities conducted for County Extension Agents in the North Region, special consideration was given regarding professional development...
opportunities for County Agents statewide as part of the Biological and Agricultural Engineering Extension programs. By involving County Agents in planning and conducting these events in addition to including them as target audiences, we increased the overall value, visibility and impact of the programs.

While relatively few agents participated fully in these events, response by participating agents was very positive. Outcomes will need to be assessed in light of the quality of local programming efforts conducted by the agents with support of BAEN Extension Specialists.

North Region Cotton Premier Program

Randy Boman met with Dr. Galen Chandler and Dr. Courtney Myers with Texas Tech on August 4 to fine tune the cottonlink web site for Cotton Premier Program agents in the North Region. Agents should be using this program going into program planning this fall.

Cooperating Extension specialists (David Kerns, Jason Woodward, Peter Dotray, Dana Porter, Mark Kelley, Jackie Smith, Jay Yates, and I) resubmitted updated evaluation instruments for North Region Extension agents with the Cotton Premier Program to use at various meetings.

The Web site provides the ability to print out PDF forms of these files to use to survey clientele, and for summarization and data management of outcomes. A Texas State Support Committee - Cotton Incorporated grant for $10,000 was obtained by Chandler, Boman and Kerns to assist with funding of Web site programming. This was presented to 6 D2 Extension agents during the August 27th agent training. Some work still needs to be done on the Web site, but it is nearly ready for implementation.

An agent training event was held on August 27. We toured the Helms and Halfway stations, New Deal Texas Tech Farm, and the Lubbock Glover Farm. We had a total of 14 North Region agents attending. Cooperating specialists included Peter Dotray (weed control and strip tillage), David Kerns (insect management), Jason Woodward (disease and nematode management), Mark Kelley (harvest aid management), Randy Boman (Bayer GlyTol, irrigation termination, deep sampling). Cooperating AgriLife Research personnel included Jim Bordovsky (irrigation projects at Halfway/Helms, including subsurface drip irrigation research), Craig Bednarz (irrigation termination research, trait event screening, and research program focus) and Wayne Keeling (volunteer cotton control).

A 3-ring notebook of handouts was provided including the 2007 Cotton Resource DVD, various other handouts, CDs and handouts from the SDI Field Day and also provided a gratis lunch for all participants using project funds. Agents with the Cotton Premier Program met with us in the Lubbock Center Classroom and I provided an overview and examples using the cottonlink web site. They were provided a step-by-step instructional handout on how to use the cottonlink web site. Extension agents indicated that they liked this approach.

Conducted agent training on early season management of the cotton plant (emergence to first square). Five agents attended. Topics of discussion included what is a heat unit, when to plant based on soil temperature, and projected heat units, and replanting decisions.

- Prior to the presentation only 20% considered their understanding of when to plant to be good to excellent. Following the presentation, 100% considered their understanding of when to plant to be good to excellent.
- Prior to the presentation only 10% considered their understanding of when to re-plant to be good to excellent. Following the presentation, 100% considered their understanding of when to re-plant to be good to excellent.
- Prior to the presentation only 20% considered their understanding of what is a heat unit to be good to excellent. Following the presentation, 100% considered their understanding of what a heat unit is to be good to excellent.

Soil and Crop Sciences faculty conducted a state-wide county extension agent training using Centra Symposium regarding soil fertility and forage management reaching approximately 32% of the state’s CEAs- ANR.

Soil and Crops faculty are currently working with the South Region Program Director to train agents on the use of stockpiled warm-season perennial grass instead of feeding hay and working with the West Region Program Director to train agents on protecting Texas waterways using Lone Star Healthy Streams.

Corn and wheat production training for CEAs in the North Region are planned for 2010.
Goal 3: Provide science-based, multidisciplinary programs for post-harvest/value-added food industry professionals including enterprises in the following major sectors: storage, processing, manufacturing, quality assurance, inspection, and distribution.

**Benchmarks:** Sixty-six people received this training and certification during 2007. Also, over 260 products were evaluated with lab results.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify industry groups and work with their leadership to prioritize relevant educational opportunities for entrepreneurs and other targeted audiences in value-added industry segments.</td>
<td>2009–2013: By September 1 each year, schedule completed for the next calendar year for continuing education targeting food industry professionals. (OUTPUT)</td>
<td>D Welsh</td>
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<td>YES</td>
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<td>2009-2013: 55% of participants in the Better Processors School increase knowledge pertaining to low-acid and acidified foods as indicated by passing a 15 part certification exam.</td>
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**Results/Narrative**
Fifty-six (56) people were certified for processing low-acid and acidified foods through participation in the **Better Process Control School** conducted by Al Wagner. Participants must pass a series of 15 exams to become certified. One hundred (100) percent of participants indicated an increase in knowledge and passed the examinations and became certified by the FDA and the USDA.
Agriculture – Food, Fiber, and Green Industries

**Imperative 2:** Texas livestock and poultry product producers and related agribusinesses effectively evaluate and adopt research-based technology applications and best management practices by region for sustainable and profitable livestock and poultry management systems.

**Statement of Support:** The diversity of the Texas landscape and environment markedly impact the potential for utilizing land resources for the production of livestock, as well as livestock and poultry products. Therefore, research-based technology must be adapted by region to meet the economic goals and environmental needs of producers and other groups within the livestock and poultry sectors. The Beef Roundtables and the Extension Data Summits identified this goal as highly important.

### Summary of Educational Contacts for Imperative 2

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,686</td>
<td>98,887</td>
<td>482,344</td>
<td>707,916</td>
<td>806,803</td>
</tr>
</tbody>
</table>

**Goal 1:** Livestock producers improve knowledge of production and management systems to improve quality, profitability, and sustainability.

**Benchmarks:** Over 65,000 livestock producers and owners were educated by Texas AgriLife Extension Service in 2008. Online video, CD and DVD education reached another 55,000. Web-based delivery of printed material and popular press reached over 9.2 million. Knowledge gains ranged from 36% to 70% in key emphasis areas targeted for knowledge increases: livestock/horse nutrition, cattle handling, record keeping, health practices, food safety control points, environmental management and quality control. At least 55% of livestock owners and producers surveyed in 2008 said they intended to adopt various practices. These include: preconditioning of stocker cattle, adoption of research-based principles in feeding and managing horses, sheep/goats, evaluation of livestock for selection and for performance parameters, theft prevention/bio-security practices and drought management/recovery.

### Strategy Timeline/Measure(s)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
</table>
| Provide science-based, multidisciplinary programs to producers and associated agribusiness professionals relative to technology transfer in livestock systems through a variety of targeted and/or named educational programs. | 2009–2013: Livestock producers attending educational programs will increase knowledge, skills, and/or utilize best management practices to improve quality or profitability. (OUTCOME)  
2009–2013: Ten percent of livestock owners/producers attending educational programs report a savings in money or increased profit due to adopting best management practices. (OUTCOME)  
2009 - 2013: Livestock producers acquire the knowledge to utilize decision aid software and management information systems technology to effectively evaluate technology adoption and other management decision-based alternatives in the livestock production operation. (OUTCOME)  
2009–2013: Twenty technical service providers trained per year to assist concentrated animal feeding operations (CAFOs) to obtain and maintain permits for environmentally sound disposal of animal wastes. (OUTCOME) | R Gill  
B Faries  
R Gill  
M Waller  
B Lesikar | YES  
NO |
encourage adoption of practices.

Provided speaker support to educational programs conducted by county Extension and commodity organizations.

Provided expertise consultation to Extension faculty and livestock producers and veterinarians.

The in-state and out-of-state sales of the interactive Beef Herd Health Management Calendar CD educational package at $98 per copy continue.

- $9,370 revenue deposited (07-08)
- $2,765 revenue deposited (08-09)

Web-based Livestock Health Information Extension Program

Impact: Enhanced information delivery capabilities with increased clientele base by assisted-learning internet technology.

Progress: Faculty effort was devoted to adding and updating revisions of pertinent information for education of users. Frequently asked questions and answers and publications continue to be added. The outreach database encourages nation-wide communication for efficient retrieval of useful information and submission of problem questions.

Web hits continue to increase.

Cow Management: A-Z Series Workshops - For producers who had not participated in the previous cow management program series, respondents indicated an average adoption rate of 32% for economic and financial management practices before the program, and a 56% average adoption rate after the program. While responses from producers that had also participated in the previous cow management program series. The respondents indicated an average adoption rate of 55% for economic and financial management practices before the Cow Management: A-Z Series Program, with a 70% average adoption rate after the program. In addition, respondents were asked to provide an estimate of the program's economic impact on their operation expressed on a breeding cow basis. For producers who had not participated in the previous cow management program series, based on the midpoint of each range, the weighted average economic impact was $16.77 per breeding cow. This level of economic impact translates into an average benefit of $1,239.91 per respondent based on current cow numbers, and a total respondent benefit of $23,550 for the program. Extrapolated to average attendance levels (72 per session) the total economic impact of the program for these participants is estimated at $38,273.52.

Cattle Enterprise Economic and Financial Management Seminar – On April 22, 2009 Texas AgriLife Extension Service/Agricultural Economics faculty presented a seminar titled "Karnes/Wilson County Cattle Enterprise Economic and Financial Management Seminar" in Falls City, Texas. This seminar was attended by 61 producers that manage 2,499 breeding cows. 51 percent of the producers attending the seminar indicated that they are part-time producers.

- This seminar was very effective in increasing the level of understanding of important economic concepts that producers need to make sound economic and financial decisions. 100% of the producers either agreed or strongly agreed with the following statements: 1) I have a better understanding of how capital budgeting models may be used to evaluate the economic feasibility of prices paid for replacement cows and heifers. 2) I have a better understanding of the factors that impact the decision to early-wean calves, and how decision support aids can help in making that decision. 3) I have a better understanding of how comparisons can be made to help evaluate the relative value of different quality hay.

- The seminar was also very successful in convincing producers to adopt recommended economic practices. 81% of the producers that attended the seminar indicated that they would: 1) Use the principles related to capital budgeting that were discussed in this seminar when making cow-calf investment decisions. 2) Use the principles related to partial budgeting that were discussed in this seminar when making early-weaning and hay valuation decisions.

Southwest Beef Symposium - Two extension economists were invited to present economic information to a collection of Texas, Oklahoma, and New Mexico livestock producers at the Southwest Beef Symposium in Midland, Texas. Each presenter was evaluated by participants as INCREASING THEIR LEVEL OF KNOWLEDGE concerning their assigned topic by over 30%. The 76 respondents owned/managed 52,465 head of cattle (avg. 690 head).

Cattle Market Outlook and Management Strategies for 2009 - On January 19, 2009, an extension economist addressed beef cattle producers at a Texas AgriLife Extension Workshop in Cleburne, Texas. The presentation centered on Beef Cattle Market Outlook and Management Strategies for 2009. Of the 47 respondents, 64% plan to take actions or make changes based on the information learned at this workshop; and 93% anticipate benefiting economically as a direct result of what they learned from this Extension activity.
Beef Cow-calf Standardized Performance Analysis (SPA) - Fourteen analyses were completed during the 2009 fiscal year. Of these 14 herds, eight were in Texas, three in Oklahoma, 2 in New Mexico, and one in Montana. Of the eight Texas herds, five were in Texas SPA Region 5, two were in region 2 and one in region one. The total number of breeding females within these herds was 11,553 for an average herd size of 825 breeding females. Total land area utilized by these herds was 335,037 acres for an average land size of 23,931 acres. These ranches generated 5,407,206 pounds of weaned calves valued at $5,967,933 or roughly $1.10 per pound. Based on past work, it was determined that completing the SPA analysis multiple years increased the net income of the herd $19.00 per female. Ten of the herds completed during 2009 were repeat herds with the projected increase in net income of $188,803.

54th TAMU Beef Cattle Short Course – This annual event is recognized by producers, industry leaders, and educators as the largest and most comprehensive Extension beef cattle program in the nation. Outputs: The 2008 Texas A&M Beef Cattle Short Course attracted 1,537 participants from 15 states and 6 countries. 20 different “Cattleman’s College” sessions and a general session titled “Managing your Beef Cattle Operation in the New Era of High Input Costs” were held during the three-day event. The program had 75 different presentations by 69 speakers from Texas AgriLife Extension, Texas AgriLife Research, the College of Agriculture and Life Sciences, other universities and from industry organizations. Several media outlets (newspapers, trade magazines, radio, TV) covered the event including the “From the Ground Up” program on KBTX. Outcomes: 95.2% of participants anticipated benefiting economically as a result of attending the Short Course. A Private Applicator’s License Training was held and 100% of the 44 participants passed the TDA exam. Adoption: Participants attending the different educational sessions responded with adoption rates ranging from 61% to 98% (Table 1) for the beef cattle management areas covered. Satisfaction: 98% of participants were satisfied with the experience. In addition, 96% said that their perceived value of the Short Course was ranked as “quite valuable” or “extremely valuable.”

Supplemental Feeding Practices in Cow-Calf Operations
Feed and hay costs have historically represented a large portion of beef cattle producers operating costs. Within the past two years supplemental feed costs have doubled and inputs associated with hay production have also nearly doubled. Thus, Texas beef cattle producers are very concerned about feed costs and searching for methods to reduce these inputs without sacrificing cow production. The general theme for the 2008 Texas A&M Beef Cattle Short Course was “Managing your Beef Cattle Operation in the New Era of High Input Costs.” The Nutritional Management Session focused on cow-calf feeding programs this year in an effort to address these issues and ultimately improve the profitability of beef producers in attendance. This session had the highest overall adoption rates of any of the 20 Cattleman’s College Sessions at the Short Course. Intentions to adopt better cow feeding practices ranged from 90% to 97% for the topics covered.

Beef, Pasture and Range Workshops
Dr.’s Wayne Hanselka and Joe Paschal (in concert with the 18 participating CEA-Ags) conducted seven 2008 Beef, Pasture and Range Workshops in May and June. This years focus was on Understanding and Managing Cost of Production. There were a total of 198 attendees (113 returned evaluations, a 57.1% response rate). Overall there was a 47.2% increase in knowledge. In terms of adoption, the average for “probably will or will adopt” was 59.4% with 21.4% already having adopted some of what we presented. A total of 82.1% indicated that what they learned will help them make better management decisions. Those decisions were expected to be worth an average of $68.70 per head. There were a total of 8,062 cows grazing 42,410 acres represented so the potential economic value of the seven seminar was $347,759.46. In addition to these scheduled meetings, Wayne and I presented this material to four other groups (the CEAAs have the evaluations) and those were attended by 145 additional clientele.

Drought Management for Beef Cattle Producers
- South and Central Texas continues to be gripped in a long term Exceptional Drought. Beef cattle production in South Texas is a BILLION dollar industry and when drought impacts cattle production the impact is felt throughout the rural communities where beef producers live as less food, fuel and feed are purchased and less tax dollars are collected. It is projected that many producers will not return to cattle production following the impact of this long-term droughts and an aging population (and an easier return from leasing for wildlife). It has been estimated that about 40% of the cattle in this area have been moved somewhere else, or marketed to be turned into beef, and will never return.
- Specialists from Animal Science and Ecosystem Science and Management conducted Drought Management educational programs in 24 counties in 4 Extension Districts attended by over 1,000 clientele. A drought management model was conducted by Risk Management Specialist, Mac Young and a bulletin was written to use as a guideline for ranchers. CEAs in three districts were sent current and timely articles for their news paper articles and radio programs. Marketing information is sent to them weekly via email.
  Attendees were instructed on how to recognize impending drought, how to prepare a drought management plan (destocking plan, marketing plan, supplementation plan, etc) and if they were in a drought, reviewed their options and the needs of cattle until a plan could be implemented.
  Knowledge change surveyed at most of the educational programs was 90% or higher and over 2/3’s indicated they intended to complete and follow a drought management plan (about 1 in 10 said they already had one).

Value Added Cow Program
In October we held the first Value Added market Cow Program at ABF Packing Plant on the Tarleton State University campus in Stephenville, Texas. The goal was to teach dairy and beef cattle producers from across Texas about best beef quality management practices and beef value of market cows and bulls. The National market Cow and Bull Beef Quality Audit showed that beef producers could improve the quality of beef and possibly increase the dollars received from the sale of these cattle. The thirty participants who attended this intensive, hands-on workshop own or manage over 123,340 cattle annually. In post-event surveys participants that responded said that the information in this Beef 706 program would on the average save them $23.75 per head. If that economic improvement were to be applied to all cattle, represented in this program, that would
and the Texas & Southwestern Cattle Raisers' Association equate to a 2.9 million dollar savings. According to survey respondents the knowledge level improvement went from average to high or moderately high in the areas of BQA, handling disabled cattle, dairy and beef cattle condition scoring, and market cow utilization. Using the scale of the survey this represents a 100-300% improvement in knowledge level in these areas. The Texas Beef Council is fully sponsoring this program.

**TBQP Report Card** – The Texas Beef Quality Producer Program is the Beef Quality Assurance educational delivery program for cow/calf and stocker cattle operators. The TBQP has now reached approximately 6,870 producers representing over 1 million head of cattle. It represents ongoing collaboration across Texas AgriLife Extension, Texas Beef Council and the Texas & Southwestern Cattle Raisers' Association.

Program evaluations indicated:
- 22% of participants rated the programs good and 78% rated them excellent.
- 92% thought the program would created a positive economic return to their operation.
- 98.5% felt these programs were a wise use of their tax dollars and checkoff contributions.

Evaluations of these TBQP programs indicate there were:
- 100% of participants probably, definitely will or already have adopted BMP for injection sites.
- 100% of participants probably, definitely will or already have adopted BMP’s for beef quality assurance.
- 88 to 97% of participants probably, definitely will or already have developed a preventative herd health plan for their operation.
- 93 to 100% of participants probably, definitely will or already have adopted appropriate carcass disposal practices.

Increases in level of understanding about food safety and quality control best management practices were also measured:
- 55% agreed and 36% strongly agreed that their understanding increased as to the impacts of genetics on beef quality increased.
- 46% agreed and 47% strongly agreed that their understanding increased as to the impacts of handling livestock on beef safety and quality.
- 43% agreed and 46% strongly agreed that their understanding increased as to the impacts of handling and marketing of cows and bulls on beef quality.
- 51% agreed and 40% strongly agreed that their understanding increased as to the importance of them observing restrictions on the use of pesticides.
- 100% of participants reported learning at least one best practice to make more informed decisions.

Consistent with prior evaluations, the economic impact was placed at $25.67 per weaned calf.

**Regional Beef Quality Assurance (BQA)** – Regional BQA programs reflect above mentioned alliances with TSCRA and TBC. Producers received 4 BQA credits for attendance. Of these BQA programs:
- 98% was rated the program as Excellent or Good.
- Knowledge gains of 25% were reported for selection of replacement heifers, cull cow/bull management, and stocking rates.
- 50 % knowledge gain was achieved regarding Bio-Security
- 38% reporting probable/definite adoption of bio-security practices, and
- 12 % expecting to participate in the BQA ear tag program.
- 50 % reported intentions to adopt hay/forage testing practices. The program also served to prioritize future topics, with producers listing fertilizer use, injection site demonstrations and wildlife considerations as key topics.

**Cowboy Beef Quality Assurance Program**
There are approximately 130,000 ranches with 5.3 million beef cows in the state. Each year working cowboys or day laborers process a large percentage of these cows as well as their calves. Any time pharmaceuticals are administered to cattle, there is a risk that beef quality may be negatively affected and reduce beef industry profitability. A three-hour Beef Quality Assurance demonstration was held for this specific clientele group on January 22, 2009 in Buffalo, Texas. Dr. Jason Cleere and Dr. Dale Hale coordinated and conducted the program.
A total of 45 individuals attended the Buffalo Cowboy Beef Quality Assurance program. Surveys from 35 individuals revealed that participants process more than 48,827 head of cattle each year and 100% of the respondents indicated that they would follow Beef Quality Assurance guidelines that were covered during the program.

**Dairy Beef Quality Assurance**
Involvement of the dairy industry in proactively addressing issues within their production units related to improving the quality and safety of the beef produced from their operations has been difficult to achieve. Dairy cattle make a significant contribution to the total beef supply with over 35% of the market cow and bull beef coming from dairies. In an effort to engage dairy producers in this process a cross section of dairy producers, veterinarians and extension specialist were brought together from across Texas, Mississippi and Louisiana to discuss issues faced by the cow harvest operations and the purveyors of the products coming from dairy cows and bulls. This was a preliminary meeting to expose dairy practitioners and producers to the concerns of the meat industry related to the use and absorption of their product into the overall beef complex. Additional discussions centered around the importance of biosecurity measures to decrease the introduction of zoonotic disease into their herds and how those practices could lead to improved prevention measures for all infectious diseases.
An open and frank dialog among participants was very beneficial to all involved parties. The BQA Dairy meeting successfully increased participants’ awareness of the
importance of public perception and its effects on the Dairy industry. Participants gained an increased awareness of the disease risk potential inherent in herd replacement practices. Participants maintained the perception that a trained workforce was highly important. The meeting increased participants’ awareness of the importance of implementing measures to prevent exposure of dairy operations to foreign animal diseases. More emphasis should be placed on the importance of workforce training in biosecurity issues as this topic experienced a decrease in perceived importance by participants after participation in the BQA-Dairy meeting.

As a result of the meeting participants would now use residue education, BQA, injection site information, animal handling education, and communication with Ag groups and producers in their operations. Participants indicated the top 5 biosecurity measures they routinely implanted prior to the BQA-Dairy meeting were: isolation/quarantine of new animals, visitor restriction, herd testing/screening, vaccination, and closed herds. The top four diseases of concern indicated by participants were: TB, Trich, Brucellosis, and BVD.

Participants’ ranked the top 5 topics of importance emerging from the BQA Dairy meeting as: 1) Residues, 2) Producer Education, 3) Animal Handling, 4) Bio-Security Practices, and 5) Injection Sites. Media training was ranked overall as the least important topic.

Southwest Dairy Day
The Dairy industry is concentrated in relatively small geographical pockets across the state. One of the largest milk shed’s in the state is located in and around Stephenville, Texas. The industry has come under scrutiny because of concerns with non-point runoff pollution of local water supplies. While the dairy industry is one of the largest economic generator for the local and area economy support of the industry has decrease over recent years. Locally, public perception of the dairy industry has been driven by this controversy.

Local dairymen and AgriLife Extension teamed up to develop and deliver the Southwest Dairy Day. This event has not been held in many years and was designed to bring the public to dairy operations to show what the industry is and how it is an integral part of the community.

Southwest Dairy Day was held at Sierra Dairy in Dublin, TX. Dairy Day attracted approximately 70 vendors displaying latest technologies and over 600 people attended the event. Dairymen attended from all around North Central Texas, including dairymen from Eastern New Mexico, Panhandle of Texas, and Oklahoma. Demonstrations were conducted on proper manure spreader calibrations, and advantages and disadvantages of the weeping wall manure separation system. In addition, bus tours were held that transported people to two other dairies to showcase the latest cross ventilation technology to improve cow comfort.

Dairy Environmental Issues – From Sept. to Nov., 2008 major dairy efforts were directed to environmental issues impacting the dairy industry. Producers received 865 hours of CEU’s towards their educational requirements to maintain compliance on their TCEQ permits at programs in East and Central Texas. Jordan and Bilby assisted with the planning of the programs and conducted portions of the trainings. The program in East Texas was evaluated with the following outcome: Of the attendees 58% plan to make changes based on the information provided, 91% said information was relevant and applicable to their situation, 50% said they would benefit economically from implementation and 78% said they would recommend this activity to others. In addition, a Feed Management Workshop, regarding the Natural Resources Conservation Service Practice Standard for Feed Management (Code 592), was held at the Amarillo Center with 41 total attendees from both the dairy and beef industries. This was a joint program of Texas AgriLife Extension Service, Plains Nutrition Council, Texas Animal Nutrition Council and the Plains Chapter of the American Registry of Professional Animal Scientists coordinated by Jordan and McCollum. Jordan assisted USDA-ARS in identifying priority research areas for the national Agricultural Research Service program for the next five years of research regarding Agricultural Waste and By-product Utilization. The Environmental Records Calendar produced in cooperation with the Texas Association of Dairymen was changed based on producer input, 800 copies printed, and distributed to each dairy producer in Texas. Bilby participated in the Leon Watershed Protection program and both specialists were involved in multi-agency discussions regarding the Bosque Watershed. Finally dialogue was initiated with TCEQ and EPA regarding compliance issues facing the dairy industry, particularly in East Texas.

Dairy Issues for the Texas Panhandle

- The Texas Panhandle has seen phenomenal growth in the economic engine driven by the dairy industry as cow numbers have increased from approximately 14,000 to 213,000 over the ten year period from May 1999 to 2009. The 72 herds in the region average nearly 3000 cows each while the statewide average is approximately 600 cows per herd. The sheer size differential means educational needs in the region may vary significantly from those of other regions of the state.
- AgriLife Extension developed a survey for producers in the region which was conducted in person by the agents and Extension Associates in nine counties to prioritize programming for the region. Forty surveys were completed and summarized. A meeting is planned for October 8 to discuss the results of the survey with producers and further develop a plan of action for future programming. Some of the programming areas which are being developed include: alternative forages, irrigation system evaluations, the Southwest Dairy Field Day (tentatively May 13, 2010), herdsmen schools, etc. There were many areas in the labor segment dealing with immigration issues that cannot be addressed.
- Regionally, the broad topics of water and labor were identified as key components needed in future programming
  - 100% of the counties indicated water issues to be their greatest area of need and concern.
  - 88% indicated labor issues to be their second greatest concern and need for assistance.
  - Other areas of concern highlighted were irrigation management, soil fertility, silage production, and reproductive management of the dairy cow.

Plains Nutrition Council – This annual meeting is a coordinated by Extension faculty to facilitate the delivery of the latest nutritional research and information related primarily to confined beef cattle feeding operations.
Extension faculty provide services such as site arrangements and coordination, registration, compiling and editing proceedings. This year’s conference was attended by 456 professionals and graduate students representing cattle feeding companies, consultants, allied industries, research, and extension from 20 states and 5 foreign countries. Based upon consultants, company nutritionists, and cattle feeding company personnel in attendance, at least 90% of the feed-yard capacity in the United States was represented at the meeting. Professionals from Canada, Australia, Brazil, Mexico, and Argentina also attended the conference.

**Beef 706 –**

**Summer Beef 706** - Seventy-two cattle producers who own or manage 64,900 cattle attended one of the two summer Beef 706 programs. Beef 706 is a program conducted by the Texas AgriLife Extension Service and funded through the generous support of the Texas Beef Council. Beef 706 participants learned about best beef quality management practices and principles to assure a safe supply of beef to consumers. On average these producers had a 150% gain in knowledge in food safety principles, beef quality assurance, cattle nutrition, cattle evaluation, grid marketing, and genetic selection. Of those responding to the exit survey 91% said that what they learned at the Beef 706 program would save them on average $27 per head of cattle. If applied to all the cattle represented in these two programs that would represent a savings of $1,752,300.00. Sixty-two percent of the respondents said they would stop old practices and 82% said that based on the training they had received they would adopt new production practices. After the training 100% said they now realized that they were at least in part responsible for the consumer perception of the beef and 100% said they would share the information they received with other cattle producers.

**Panhandle Feedyard Beef 706** - Sixty cattle producers who own or manage 1,470,000 cattle attended one of the two Feedyard Beef 706 programs. Feedyard managers, cattle buyers, office personnel and assistant managers primarily attended these two special Beef 706 programs. They work at some of the largest feedyards in the USA. This set of programs was held at the Texas Tech University meat laboratory. Texas AgriLife Extension, Texas Tech University, and the Texas Beef Council partnered to develop and conduct these two programs. Beef 706 participants learned about best beef quality management practices and principles to assure a safe supply of beef to consumers. The knowledge gain ranged from 100% to 200% in the areas of food safety principles, beef quality assurance, cattle nutrition, cattle evaluation, grid marketing, and genetic selection. Of those responding to the exit survey, 100% said that what they learned at the Beef 706 program would save them on average $18.58 per head of cattle. If estimated savings were applied to all the cattle represented in these two programs that would represent a savings of $27,224,400. Of those respondents 46% said they would stop old practices and 88% said that based on the training they had received they would adopt new production practices. After the training 100% said they would share the information they received with other cattle producers and 96% said they would recommend the Beef 706 program to other cattle producers.

**August Beef 706,**

- Two Beef 706 programs were held teaching best beef quality management practices to cattle producers. This program is held in partnership with the Texas Beef Council, with the goal teaching cattle producers how to raise cattle in a manner that will produce a high quality and safe beef product for the consumer.
- Program participants learn how to evaluate live cattle and estimate the production parameters that determine value of live cattle and the muscle cuts they produce upon harvest. In addition, participants are instructed in best management practices to ensure the production of a safe, wholesome and nutritious beef product. Attendees also participate completely in the harvesting and processing of these cattle into retail product.
- Through survey responses at the conclusion of the Beef 706 it was determined that there was up to a three fold increase in knowledge gained regarding best beef quality management practices.
  - 100% of the respondents said they would save money as a result of attending this program.
  - On average responders said that information presented in the workshop would save producers $33 per head.
  - Respondents indicated they owned or managed 10,100 head of cattle resulting in a potential savings of $333,000 dollars.
  - 100% of the respondents said they would adopt new practices as a result of attending the Beef 706 program.

**Youth Beef 706,**

- The first Beef 706 target specifically at youth was held this summer. The goal of this program was to teach the future leaders of the beef cattle industry about the important factors that impact the safety and quality of beef. Also, they learned about the importance of a viable herd health program and genetic selection. The program was attended by 30 youth, parents, and extension agents.
- These youth toured a feedyard and a packing plant and learned how to grade and fabricate beef carcasses. As with the Beef 706 program this Youth 706 taught best beef quality management practices. This program is held in partnership with the Texas Beef Council and Texas Tech University.
- Through survey responses at the conclusion of the Program it was determined those attending owned or managed over 10,000 head of cattle.
  - There was a two to three fold increase in knowledge gains regarding food safety, beef quality assurance, live and carcass evaluation and best beef quality management practices.
  - 80% of the respondents said they would adopt new practices as a result of attending the Beef 706 program and
  - 100% said they would recommend this program to others.

**Southwest Beef Symposium** –

Many beef producers in West Texas and New Mexico operate larger herds of cow-calf and stocker cattle, and do so under extensive conditions. In addition, the Texas panhandle and Eastern New Mexico are key cattle feeding and meat packing areas. There is a need for educational programs tailored to southwestern beef producers.
This annual two-day educational program is jointly coordinated by Texas Agri Life Extension and New Mexico Cooperative Extension. It includes and receives support from a concurrent industry trade show attended in '09 by 21 companies and organizations. Also in ’09, sponsorship monies were received from 9 additional groups. Onsite post survey was given to the 129 attendees of which the cow-calf, stocker cattle and feeding operators managed on average 757 cows, 618 yearling and 558 fed cattle, respectively. Other information collected from those responding to the evaluation indicated:

- **391** miles was the average distance participants traveled (roundtrip) to attend.
- **$405** was the participants estimated total costs to attend the meeting.

**Economic Benefit.** Participants were asked about the economic value of the program to them - relative to their cost of travel and time to attend the meeting. **82%** said the value of the program was at least equal to their cost. 13% said “uncertain” and 0% said “no”. With an average travel cost of **$405** per participant, the total value of the program is estimated to be at least **$45,360**.

Information has been re-circulated in major livestock publications. Reporters for Beef Magazine, Livestock Weekly and the Midland Reporter Telegram were present.

**Beef Pasture and Range Workshops** – Joe Paschal and Wayne Hanselka (in concert with the 18 participating CEA-Ags) conducted seven 2008 Beef, Pasture and Range Workshops in May and June. This year’s focus was on Understanding and Managing Cost of Production. There were a total of 198 attendees (113 returned evaluations, a 57.1% response rate). Overall there was a 47.2% increase in knowledge. In terms of adoption, the average for “probably will or will adopt” was 59.4% with 21.4% already having adopted some of what we presented. A total of 82.1% indicated that what they learned will help them make better management decisions. Those decisions were expected to be worth an average of $68.70 per head. There were a total of 5,062 cows grazing 42,410 acres represented so the potential economic value of the seven seminar was $347,759.46. In addition to these scheduled meetings, Wayne and I presented this material to four other groups (the CEAs have the evaluations) and those were attended by 145 additional clientele.

**Mid-South Ruminant Nutrition Conference** – Reached 125 nutrition consultants, veterinarians and allied industry persons.

- **96%** were mostly or completely satisfied with the program content
- **85%** said the subject material was very useful
- **100%** said the conference contained useful information

**Livestock Care & Handling** – Dr. Gill continues to cooperate with the National Cattlemen’s Beef Association, Livestock Marketing Council and the Livestock Marketing Association in delivering the NCBA Stewardship and Stockmanship program throughout Texas and 25 additional states. This program provides training to Livestock Markets to improve livestock movement and reduce stress and injury to livestock and employees. Coupled with each Livestock Market training is a program for their consignors. These programs are conducted to train producers in low-stress livestock handling. These producer trainings focus on the economic and animal welfare/handling returns gained through adoption of these programs. A total of 47 of these trainings were conducted across the states with eight of them in Texas.

Four additional trainings have been conducted for University of Minnesota and Minnesota Department of Agriculture for personnel and producers managing cattle in the TB Management Zone in Northwest Minnesota. Dr. Gill also worked with the University of Florida in conducting three trainings for producers managing in excess of 100,000 cows which produce calves destined in large part to be managed and fed in the Texas Panhandle feedyards. Videos taken during these trainings will also be used in the development of livestock handling videos for training producers in the future.

Dr. Gill has also worked with NCBA to develop a livestock transportation video for cow-calf and dairy producers. This cooperative project between North Carolina, Tennessee and Texas was designed to decrease injury and bruising in market cows and bulls and to reduce stress in transportation of calves to market. Additional training materials are being developed in a cooperative agreement with NCBA and the Texas Cattle Feeders Association and Nebraska Cattle Feeders to develop cattle handling and safety training videos specifically targeting the confined feeding industries.

Dr. Gill also participated in a train the trainer program sponsored by Farm Safety 4 Just Kids and the Southwest Center for Agricultural Health, Injury Prevention, and Education. In this training Extension agents Vocational Ag. Teachers and were given an overview of the major causes of injury and death on livestock operations and safety and awareness programs to reduce the risk to youth and adults in dealing with animals.

**Stock Show & Contest/Camp Support** – Throughout the year, 15 specialists work with 8 Stock Show groups to superintendent, coordinate and conduct 55 shows and contests involving 33,000 head of livestock and 48,980 exhibitors, contestants and family members/spectators. These 15 specialists also help organize and produce 47 District, Multi-District, State and National contests, clinics and camps involving another 4,320 head of livestock and 15,130 people. Specialists provide specie-specific technical expertise as well as leadership for these Junior and Open Livestock/Horse events to promote enjoyable and educational experiences in a highly competitive environment. Specialist involvement is also recognized via changes in animal handling, stress reduction and livestock project validation. Overall, on an annual basis, these specialists are involved directly in 102 contests/camps with over 37,300 head of livestock and 64,100 people. There are 15 General Livestock, 25 Sheep/Goat, 25 Horse, 15 Meats, 15 Cattle, 7 Swine and 1 Dairy contests/camps at locations across Texas, not counting many other county and multi-county open contests/clinics/camps that involve specialists.

**Programs Targeting New Audiences** – These programs are targeting new adult and youth audiences. **Humane Care and Handling of Livestock** programs/materials target cattle transporters and cattle handlers about the proper humane methods of gathering, handling, transporting and caring for cattle. **Pasture and Land Management Workshops** target novice or beginning producers with information on soil fertility, forage establishment/production, animal health & nutrition (Animal Science & Soil/Crop...
BBQ 101 was started in 2007 for caterers, retailers and backyard food preparers. In a joint effort with the National BBQ Association (1,000 members) in Austin, the program covers basic concepts/approaches for preparation, cooking, smoking applications and principles of meat science. Use of Small Ruminants by Small Acreage Landowners grows in popularity due to increases in small acreage landowners. These owners need livestock or wildlife to qualify for agricultural exemptions, and both meat goats and hair sheep are well suited due to size, easy-keeping and minimal labor. Junior Beef Challenge targets youth who are involved in pure-bred heifer development. Conducted in collaboration with the Southwestern Exposition and Livestock Show (FWLSR), participants take a test and give an impromptu speech on how their particular breed fits the beef cattle industry. The FWLSR gave 6 scholarships at this new activity for a total of $21,000. This is one good example of how Extension works with long-time stock show contacts to develop educational programs for new audiences. AgriLife Extension Aggie Horse Judging Camps & Online Judging, are integrated educational efforts involving campus based teaching and extension faculty. The youth camps are offered and the online judging experience targets youth who have never evaluated horses on conformation or performance.

Annual Summer Horsemanship School Program

- The program provides useful, relevant information on basic, intermediate and advanced horsemanship skills and knowledge in a hands-on type learning environment to youth and adults across the state of Texas.
- A total of 8 instructors were trained and sent out to teach 24 schools in 24 counties in Texas. The program reached 615 youth, adults and volunteers. Over the 37 years, 1,275 schools have been conducted, reaching a over 45,161 youth, adults and volunteers. The program represents 3,667 teaching days, with a total of 29,336 teaching hours. There have been 214 different college-aged instructors over the 37 years.
- Riders at 16 out of 24 counties were surveyed. Notable percentages include:
  - 64% “Definitely” learned more about how to move the horse’s hips & shoulders independently
  - 66% “Definitely” learned more about how to protect their horse and equipment from theft
  - 75% “Definitely” could do one or more advanced maneuvers that they were previously unable to do.
  - 66% “Definitely” could make more informed decisions on when/how to ask their horse to perform a task
  - 65% “Definitely” could ride with more confidence
  - 66% “Definitely” could solve a problem they were having before the clinic
  - 72% “Definitely” felt more competent in working their horse
  - 74% “Definitely” enjoyed their horse more

“Hot Topics” (in the Beef Industry)

There are numerous changes in state and federal programs related to animal health and production that being proposed or implemented. These regulatory changes can and will have significant impact on livestock producers across the state. A total of seven meetings were conducted across the south region. Over 540 producers attended the meetings and were educated on the proposed or recently adopted regulations and impact on production related to the National Animal Identification Program, Country of Origin Labeling, Texas Fever Tick Quarantine, USDA regulation related to the handling of “Downer” cows and the newly proposed Texas Trichomoniasis Regulations. Overall knowledge change has averaged over 80%, with much higher changes in the latter three topics.

Comprehensive Nutrient Management Plan Development Training - On April 6, 7 and 8, 2009, I was part of the invited teaching team that provided training to technical service providers (TSPs) offered by Iowa State University in Des Moines, Iowa. I taught four modules namely animal waste characteristics, mortality management, air quality concerns and air quality technologies for animal feeding operations. The TSPs develop comprehensive nutrient management plans for concentrated animal feeding operations (CAFOs). A total of 75 participants included professional engineers, animal scientists, agronomists and agri business consultants from states including Texas, California, Nebraska, Iowa, Minnesota, Tennessee, Ohio, New York and Canada. The TSPs earned 4 professional development hours as part of their new certification or continuing education requirements. Three contact hours.

The Texas Cattle Feeders Association approached our feedlot air quality team, including two faculty with Texas AgriLife Extension Service appointments (Mukhtar and Auvermann), to provide authoritative, quantitative guidance for estimating emissions of NH3 and H2S from cattle feedyards. Our project team conferred immediately, synthesized our findings from 6+ years of field and laboratory research, and then provided the requested guidance to TCFA, which then distributed compliance templates to its member feedyards and to the National Cattlemen's Beef Association. Impact of this activity extended via NCBA to the entire nation’s cattle-feeding industry, representing 15-20 million head per year of slaughter cattle; in Texas, impact extended to feedyards producing 6-7 million head per year.

Dairies Air Emission Reporting Requirements

USEPA issued a final rule in December 2008 requiring certain animal feeding operations emitting more than 100 lbs/day of NH3 or H2S to report their emissions under the Emergency Planning and Community Right-to-Know Act (EPCRA). AFOs were given until January 22, 2009 to submit an initial report of their NH3 and H2S and a final written report by February 19, 2009 or face fines of thousands of dollars per day for failure to report. Texas AgriLife Extension engineers (Mukhtar and Auvermann) have been estimating dairy NH3 and H2S emissions for the past 6 years in anticipation of this final rule.
Winter, summer and Annual emission estimates from real-time NH3 and H2S concentrations measured at east central Texas dairy operations were provided to Texas Association of Dairymen, Kansas Livestock Association, Extension specialists in Georgia and Michigan. Dairy producers in Texas, Kansas and other states were provided good faith estimates of ammonia and hydrogen sulfide emissions from open-lot and free-stall dairy so they could comply with the rule before the January 20, 2009, deadline.

| Update Extension enterprise budgets for major livestock species in the state, including alternative production and management systems, for various geographic regions. | 2009–2013: Enterprise budgets updated and available on the Web for producers and county faculty by January 31 of each year. (OUTPUT) | M Waller | YES |
| Expand the use of distance technology to effectively reach producers and associated agribusiness professionals with relevant and timely educational information. | 2009–2013: The number of educational sessions on Extension Web sites increases each year by 3%. (OUTPUT) | P Gibbs | YES |

**Results/Narrative**

Update Extension enterprise budgets for major livestock species in the state, including alternative production and management systems, for various geographic regions.

2009–2013: Enterprise budgets updated and available on the Web for producers and county faculty by January 31 of each year. (OUTPUT)

M Waller

YES

NO

**Results/Narrative**

Expand the use of distance technology to effectively reach producers and associated agribusiness professionals with relevant and timely educational information.

2009–2013: The number of educational sessions on Extension Web sites increases each year by 3%. (OUTPUT)

P Gibbs

YES

NO

**Results/Narrative**

In 2008, 60 Texas AgriLife Extension Service enterprise budgets for livestock were developed or updated. These enterprise budgets were available and ready for producers, county faculty, and other clientele on the Web by mid-December. The enterprise budgets were viewed a total of 15,964 times on the Agricultural Economic web server during FY 2009. These enterprise budgets were available from the 12 Extension Districts which represent a wide range of geographical regions throughout the State.

2009–2013: Enterprise budgets updated and available on the Web for producers and county faculty by January 31 of each year. (OUTPUT)

M Waller

YES

NO

**Results/Narrative**

Expand the use of distance technology to effectively reach producers and associated agribusiness professionals with relevant and timely educational information.

2009–2013: The number of educational sessions on Extension Web sites increases each year by 3%. (OUTPUT)

P Gibbs

YES

NO

**Results/Narrative**

Animal Science web-based delivery of species-specific video, CD and DVD reached over 60,000 customers in meat evaluation, horse evaluation, livestock transport, disaster management, horse theft prevention and biology of ranching. From online horse evaluation, with a built-in outcome/impact indicator, 44% reported a 'definite' increase in knowledge and 58% indicated the material was a 'definite' resource for use in countywide teaching efforts targeting youth. Online use of meat evaluation increased 2 fold from the previous year and livestock transport contacts increased 4 fold.

Animal Science web-based delivery of printed subject matter resulted in excess of 900,000 page visits and 230,000 unique hosts.

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BQAonline Web Site

- The safe production of high quality beef is essential for the viability of the Beef Industry and for the safety of the consuming public. Since 2001 there has been a structured Beef Quality Assurance (BQA) program delivered directly to clientele. Development of a training DVD in 2005 followed to help support additional delivery of the program to clientele unable to attend the educational programs conducted across the state. Emerging technologies and additional access by beef producers to high-speed internet made the development of an online training program a viable option for delivering the BQA message.
- To help beef cattle producers learn best practices with regard to food quality and food safety, the Beef Cattle AgriLife Extension Unit developed an online training instrument.
- To-date 300 people have registered with the training and 237 cattle producers have completed the training. These cattle producers said in exit surveys that they either owned or managed 79,987 head of cattle. Also through the surveys they reported a 2.5 to 3 fold increase in knowledge of best beef quality and safety assurance practices.
  - 79% Are planning to stop an old practice?
  - 97% Are planning to adopt a new practice?
  - 100% Think these changes will save or make them more money? Estimated total value per respondent was $4,384 or $65 per head of cattle.
  - 97% Indicated they felt they shared the responsibility for customer satisfaction of beef products?
  - 98.5% Would share the information learned with other beef cattle producers?
  - 98.5% Would recommend this BQA training program to other beef cattle producers?

**Research planned, conducted and published with translational value for livestock production, management and use. Addresses improved management and/or decreased costs and/or use.**

| Research planned, conducted and published with translational value for livestock production, management and use. Addresses improved management and/or decreased costs and/or use. | 2009-2013 Research conducted by specialists as appropriate and published in both scientific and industry sources to support adoption of new practices and/or savings in time and money for livestock producers, owners and users. (OUTPUT) | R Gill | YES |

## Research Conducted

2009-2013 Research conducted by specialists as appropriate and published in both scientific and industry sources to support adoption of new practices and/or savings in time and money for livestock producers, owners and users. (OUTPUT)

R Gill

YES

NO
alternative strategies relevant to modern day livestock ownership and production.

Results/Narrative

Animal Science specialists authored or coauthored 20 refereed or reviewed publications in 2008-2009 and served on numerous committees for M.S. and PhD students. Research activities conducted by the Extension Animal Science specialists range from applied production trials and demonstrations to more controlled research projects targeting economically and environmentally important practices.

Water Use by Dairies in the Panhandle

Water availability and usage continues to be a major concern across Texas. Particular attention has been brought to light by the significant relocation and development of dairy operations in the Panhandle of Texas. Concern has surfaced over the use of water by the dairies and the perception that dairies will be using significantly more water from the available supplies as opposed to the cropping enterprises that existed prior to the expansion of the dairy industry in the Panhandle. Extension dairy specialists worked with Region O and A Water Planning Groups to develop projections of dairy growth in the Panhandle and the water use of those dairies. A cropping survey of several of the dairies was conducted to establish the forage patterns on the dairies with their associated water use deviations from the historical cropping patterns in the counties with dairies. The data developed was also used in an irrigation conference presentation to illustrate how water consumption by dairies was a reallocation of resources with differing economic returns to the regions. Based on the water consumption of dairy cows and facility cleaning needs, a 2000 head dairy on 160 acres uses approximately 9.25 acre inches of water annually, while the irrigation needs for various crops are as follows: cotton – 12 acre-inches; sorghum, grain – 14 acre-inches; wheat – 15 acre-inches; and corn – 22 acre-inches.

Papers Submitted and Accepted:


Current Grants Working:


Specialist Driven Research – Genetic Markers and Carcass Evaluation

Joe Paschal has continued to work during 2008-09 by assisting in the data collection phase of the American Brahman Breeders Association Carcass Project - A total of 120 purebred Brahman steers were fed at Graham Feedyard so breeders can receive feedyard, carcass (including tenderness) and financial performance data. This data is included in EPD development. In addition, he has worked during 2008-09 with the Santa Gertrudis Breeders International Steer Feedout were over 340 purebred Santa Gertrudis steers are fed at King Ranch Feedyard. Breeders were Dr. Paschal assisted in getting feedyard, carcass (including tenderness), and financial data which will be included in their EPD program in the future. In addition he has collaborated with Drs., Herring and Sawyer, Carstens (feed efficiency), Randel (crossbreeding) on their various projects, including a study of health on TAMU Ranch to Rail performance and profitability - Herring and Sawyer). Dr. Paschal has also assisted in the data collection phase with researchers at LSU, Mississippi State, and UF. Where he is on the publication list at LSU for the genomics work for tenderness markers in Brahman cattle. He is currently working with ABBA and Igenity to validate their panel of genetic markers in Brahman cattle (2009)

West Texas Cattle: Bruce Carpenter continues work with GPS tracking collars and GIS technology to study bull breeding behavior where he and Dr. Jodi Sterle are on the PhD committee of Bryan Rogers in the repro section. A large part of his dissertation involves a project using GPS tracking collars to study the breeding habits of native vs. non-native
range bulls in large and pastures. Bulls were all full brother embryo flushes. 1/2 were raised by native recip cows and 1/2 were raised by North TX recip cows and brought in as yearlings.

Dr. Bilby is working on a collaborative project with Dr. Tom Spencer at College Station. This study utilizes repeated AI on beef heifers to develop a unique experimental resource of high and low fertility beef heifers to enable a systems biology approach to discover and understand physiological mechanisms governing conceptus survival and development during early pregnancy in cattle. The end result will be to possibly find genes that are specifically related to improved fertility and develop a method to identify cattle, at an early age through genomic testing, so as to be able to select for cattle with high fertility.

Dr. Bilby recently finished a study utilizing three resynchronization strategies to improve fertility in dairy cattle that received one unsuccessful AI attempt or more. In this study the resynchronization strategy developed was named the GGPG protocol and improved fertility over both the control group and CIDR group. The second part of this experiment was doing an economic analysis which proved that the GGPG protocol improves profit per cow compared to control and in-turn is a more economically viable protocol for dairy farmers to use in their reproductive management programs.

Additional work is ongoing in an experiment producing sexed heifer embryos through in vitro fertilization and the use of sexed semen. There are three groups: 1) conventional AI group which is what the standard of this farm and many others use, 2) Frozen in vitro produced sexed heifer embryos, or 3) fresh in vitro produced sexed heifer embryos transferred on d 7 following a synchronized estrus. The goal is to improve summer fertility and farm profitability by utilizing embryo transfer in the summer and increasing the number of heifer calves born. The study is currently in progress with no results to report.

Dr. Bilby is finalizing a manuscript to be sent for publication to Journal of Dairy Science. Encapsulated niacin was fed to late lactation dairy cows to observe if encapsulated niacin feeding lowers core body temperature and improve milk production. The results from this experiment showed that niacin does slightly lower core body temperature but did not improve volume milk. However, both protein and fat content of the milk was increased in turn improving fat corrected milk yield. Currently, a USDA - AFRI grant is under review to further investigate the role niacin may play in reducing heat load on dairy cows and improving summer fertility.
Goal 2: Develop and conduct professional development programs for county and specialist faculty to enable them to effectively develop, deliver and support relevant educational programs on livestock production systems.

Benchmark: Thirteen professional development programs were delivered to County Extension Agents in 2008. There was also increased emphasis on providing professional development resources using distance technology.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work with regional program directors to determine professional development trainings to be offered in each region related to livestock production.</td>
<td>2009–2013: By September 1 each year, planned professional development opportunities in livestock production and management systems are scheduled for the next calendar year. (OUTPUT)</td>
<td>R Gill</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2007 &amp; 2009: Contact hours of professional development increase by 5% every two years throughout planning cycle. (OUTPUT)</td>
<td>R Gill</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

Results/Narrative

*Extension Veterinary Medicine Program Unit provided annual schedule of Centra Conference for professional development opportunities.

** Online Centra classes on beef herd health management were held quarterly (MAR, JUN, SEP, DEC) for professional development of County Extension Agents.
   - Agents serve as educators of this subject.

Online Centra classes on proper use of drugs in market show animals were held semi-annually (APR, OCT) for professional development of County Extension Agents.
   - Agents serve as educators of this subject.

The 2009 Texas A&M Beef Cattle Short Course has been accepted and approved as a professional development opportunity for agents. There are a total of 96 hours of concurrent programming available to agents to attend while at Short Course. Because sessions run concurrently agents have available 20 hours of training in beef production, forages and industry issues while attending the Short Course. There were a total of 72 agents attended the Short Course. A "wrap up" session and dinner was held on Tuesday evening for agents with 60 attended the meeting.

Two trainings conducted for North Region Agents and focused on:
- Cattle Health - Biosecurity, Trichomoniasis, and BVD
- Allocating Forage for Grazing

New Agents Training in College Station:
- Texas Market Lamb and Goat Validation Program
West Region Sheep and Goat Mentor Training
- Sheep and Goat Production.

Three agent trainings were conducted in the Panhandle Region to:
- Improve understanding of dairying in the Panhandle. The discussion focused on improving understanding of basic dairy farm knowledge and the issues facing the dairy industry in the panhandle. Also developed a plan to conduct a survey via the CEA agents to help develop a direction for the CEA agents and dairy specialists.
- Summarize the results of the survey that was conducted in the Panhandle. The results brought to light some of the issues the dairy producers thought were important and we discussed how to appropriately address these issues.
- New Mexico Dairy agent training was conducted as a pilot for a possible multi-state agent training. This pilot was conducted over a 4 day period in Clovis NM. During the 4 - day period Drs. Jordon, Hagevoort, and Bibly conducted seminars/discussion over basic dairy 101. Also, CEA were educated on current and future dairy issues facing the dairy industry. Farm tours and cheese plant tours were also some of the highlights of the training. Future goal is to provide a multi-state training to both NM and Texas Panhandle CEA's to improve understanding of the dairy business and utilize expertise efficiently from both states.

An agent training was also conducted for East Texas to address environmental concerns facing east Texas dairies. Dairy specialists and Texas Association of Dairymen met with EPA who brought to light some very important environmental issues facing east Texas. During this training the CEAs were made aware of the environmental issues voiced by both EPA and TCEQ and in turn a DOPA meeting was developed to educate producers on environmental concerns. In addition, topics of grazing strategies were discussed and a conference is being developed in east Texas to help educate producers on the pitfalls and profitability of grazing dairies.

Trainings are held to assist the youth programs across the state:
- North Region Beef Master Volunteer Training
  - 3 hours of 4H beef project training
- Extension New Employee Orientation (Youth Livestock Training)
  - 1.5 hours of 4H beef project training
In the South Region, Centra Trainings were conducted for agents in Beef Cattle topics that covered:

- Beef Cattle Management,
- Small Ruminants,
- Hot Topics (NAIS, Trich, Ticks, Downer Cows, GHG Tax, etc)

There was over a 90% change in knowledge. Information shared in these trainings were used in agent newsletters and columns across the region. Additionally, about two emails per week were sent to all the CEAs on current or important topics as well as a digest of the Cattle Fax Update that they use in their own professional development (about 75% actually read them) and also use in their newsletters.

The electronic newsletters Beef Cattle Pennings and Beef Cattle Browsing are put out by specialist within the Animal Science Department as sources of information and training. Agents are encouraged to utilize the information for their own training and to utilize the information for their county newsletters and newspaper columns. Pennings is sent on a quarterly basis to agents and clientele and Browsing newsletter in sent on a monthly basis to agents and selected clientele.

<table>
<thead>
<tr>
<th>Establish and maintain commodity committees and develop introductory professional development training or direct livestock industry support materials online for major Texas livestock species and enterprises.</th>
<th>2009-13: Horse industry Workshops Planning / Input Committee established / operational. (OUTPUT)</th>
<th>R Gill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 – 2013: Meat Industry Advisory Committee operational and functioning as necessary. (OUTPUT)</td>
<td>R Gill</td>
<td></td>
</tr>
<tr>
<td>2009 – 2013: Online DVDs address Beef quality and management, ranching, livestock transport, meat processing and safety, and horse theft awareness. (OUTPUT)</td>
<td>R Gill</td>
<td></td>
</tr>
<tr>
<td>2009 – 2013: Texas Beef Quality Assurance Team active in collaboration with the TSCRA and TBC. (OUTPUT)</td>
<td>R Gill</td>
<td></td>
</tr>
<tr>
<td>2009-2013: Pork industry support with TPPA and the National Pork Information Gateway. (OUTPUT)</td>
<td>R Gill</td>
<td></td>
</tr>
<tr>
<td>2009 – 2013: Online DVDs address Beef quality and management, ranching, livestock transport, meat processing and safety, horse theft awareness and Emergency Management (EDEN). (OUTPUT)</td>
<td>R Gill</td>
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</tr>
</tbody>
</table>

**Results/Narrative**

**High Plains Livestock 2027- CLO Work Force Working Group** – Educational topics for beef, dairy and swine operations were identified collaboratively with TCFA, TPPA and TAD for the workforce. Pilot beef projects have been conducted in 3 counties with Extension Animal Science helping to develop educational programs. Pilot projects are focused on the workforce at beef cattle feed-yards in response to needs assessment and dairy operations. Specialists and Extension Associates directly involved are Jodi Sterle, Ellen Jordan, Ted McCollum, Ralph Bruno and Kevin Lager.

**CLO Workforce Training Report**

The Highplains and Southplains areas of Texas have long been an area with significant populations of confined livestock operations (CLO). Until recently the majority of those CLO’s were related to feeding of beef and dairy cattle for the production of fed beef. Over the past five years, and particularly the past three years, a significant increase in the relocation and development of large scale dairy operations have occurred in this same region. Training for employees that have come to work in these CLO’s has not been able to keep pace with the expansion of this industry in areas of animal health, food safety and animal care and handling.

Leaders in both the Dairy and Feedlot sector came together with Texas AgriLife Extension to develop training materials and methods to help address the social and labor needs of CLO employees. These CLO’s are seeking help in training workers and their families in production and family/consumer science related areas. The CLO Workforce Training pilot project was started to develop a template for addressing the needs of the industry and their workforce. Extension faculty within the Animal Science Department and other colleges have developed training materials in both Spanish and English to assist in conducting this project.

During the first series of CLO workforce trainings conducted by AgriLife Extension, dairy employees were trained on three topics: assisting difficult calving, low stress handling techniques, and proper injection techniques. A turning point based questionnaire was applied to the students after the first session and repeated after the third session 49 days later. From the assisted calving session, 46% of the answers were correct on the first session; while questions on the low stress handling session were 56% correct, and the proper injection questions were 63.7% correct. In general, the audience responded better to questions related to a customized presentation (proper injection techniques). The dairy producer hosting the training noted an increase in job performance and indicated the employees were inquiring as to when the next session would be.
A second series of CLO trainings were targeted at feedyard employees in the Texas Panhandle. Focus of these Beef Safety and Quality Assurance trainings programs were to help employees understand how their actions and have an impact on the feedyard’s ability to ensure the production of a safe, wholesome product. These four regional CLO employee trainings, held in Dalhart, Perryton, Hereford and Friona, focused on the Texas Cattle Feeders Association’s - Beef Safety and Quality Assurance Program. Materials were presented in both English and Spanish. Seventy employees from 23 feedyards attended the 2.5 hr trainings. Attendees ranged were managers, mid-level managers, and line employees from various departments on the yards. Estimated one-time feedyard capacity represented at the meetings was 925,000 head (or an estimated 2.0 million head annual marketings).

**Texas AgriLife Extension**: Robert Devin, Ted McCollum, Mario Villarino. **Collaborators**: Texas Cattle Feeders Association.

NRCS - Attracting people with a current working knowledge of animal and ranching practices to serve state or federal agencies is becoming increasingly difficult. Increasingly these new hires have no production background and have difficulty in communicating with producers when working to implement or promote federal programs. In an effort to provide employees with at least a working and conversational knowledge of the industry a training was conducted in Stephenville for the National Resource Conservation Service to familiarize new and current employees in areas related to sheep and goat production. A total of 17 NRCS employees attended this one day training.

| Develop educational support for County Extension Agents, veterinarians and livestock owners and producers. | 2009 – 2013: Resource materials developed for each IRT, and for distribution through AgriLife Bookstore and Drought JIC. (OUTPUT) | A Vescal | YES | NO |
|---|---|---|---|---|---|

**Results/Narrative**

Specialists on EM Incident Resource Teams have publish and linked EM publications to the TexasEDEN.tamu.edu web site. Publications posted to date: include Drought-68; Wildfires – 7; Animal Disease issues – 42. Additionally animal science specialists have published 9 animal related biosecurity videos on Ranch TV.org and facilitated numerous industry needs assessment events engaging producers and veterinarians. During the previous 12 months CEAs and specialists held 36 sessions addressing animal diseases and reached 12,879. The agency provided disaster assessment, agronomic and animal nutrition expertise, enterprise decision-making tools and led the State’s Drought Joint Information Center (JIC) of public information officers from 11 state and federal agencies in support of the State Agricultural Drought Task Force.
**Goal 3:** Poultry industry participants increase understanding of waste management responsibilities and knowledge of best practices for reducing potential air and water quality problems.

**Benchmark:** One meeting was conducted in 2007.

| Conduct educational programs for broiler producers on the permitting process and the need for water quality management plans. | 2009–2013: 50% of program participants indicate an increase in knowledge related to environmental responsibilities. (OUTCOME) | M Farnell | Coufal doesn’t have a yearly meeting to collect outcome data. May be better to track his pubs, research, grants, etc. Would like to change to an output with potential for outcome | YES NO |

**Results/Narrative**

Two educational programs were conducted in 2008-2009. The first focused on educating turkey growers on the use of in-house litter windrowing for better management of litter during the grow-out phase. The second program focused on providing poultry growers and poultry litter end-users information on best management practices to reduce the generation of odors and the likelihood of nuisance odor complaints from poultry housing or during the land application of poultry litter. Participants in this program reported that 89% were mostly or completely satisfied. Numerous site visits were conducted to broiler, turkey and layer farms to provide clients information on a one-on-one basis to assist with site-specific waste management topics.

**Goal 4:** Poultry processing, broiler industry and layer production audiences adopt technology and management systems that improve product quality, profitability, and food safety.

**Benchmark:** NA

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and deliver curriculum to clientele on Hazard Analysis and Critical Control Point (HACCP) procedures, food safety, and plant efficiency.</td>
<td>2009–2013: Poultry processing personnel will participate in a HACCP program (OUTPUT)</td>
<td>M Farnell</td>
<td>Davis would like to delete the original benchmark since HACCP training is now mandatory. Outdated measure.</td>
<td>YES NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

- Submitted two food safety grant proposals
- Revised two food safety book chapters entitled “Poultry-Borne Pathogens: Plant Considerations” and “Preventing Foodborne Illness”
- Was not able to conduct quarterly HACCP Roundtables due to limited stakeholder travel budgets due to the economic downturn. Hope to resume these activities in the future.
- Currently all commercial poultry meat production facilities and some commercial egg operations have implemented the use of a HACCP Plan. Specialty processors may or may not have a plan because of the differing regulatory inspection requirements for these operations. Poultry AgriLife Extension continues to offer participation in HACCP Roundtables held throughout the year. These sessions allow industry representatives to directly interact with USDA-FSIS District Mangers to address concerns with inspection, changes to HACCP Systems and current regulatory issues.
Provide educational programs to the layer industry through the Texas Commercial Egg Clinic

2009-2013: 50% or program participants indicate an increase in knowledge in the areas of general food safety issues related to egg production, increased production, regulatory control, and other areas deemed appropriate from emerging issues. (OUTCOME)  

| M Farnell | YES | NO |

Results/Narrative

- Had 52 attendees at this year’s Texas Egg Clinic
- Survey responses indicated a knowledge gain in areas of: Marketing of Egg Products, Animal Welfare Issues, Ventilation, Consumer Trends, Environmental Law

- All Overall Satisfaction with the Symposium
  - 4.35 out of 5 – 87%

- Level of Understanding
  - AEB Marketing Program
    - Before presentation – 2.07 out of 4
    - After presentation – 3.31 out of 4
    - Increase of 31%
  - Animal Welfare Issues
    - Before presentation – 2.78 out of 4
    - After presentation – 3.64 out of 4
    - Increase of 22%
  - Ventilation Issues
    - Before Presentation – 2.28 out of 4
    - After Presentation – 3.36 out of 4
    - Increase of 27%
  - Consumer Eating Trends
    - Before presentation – 2.00 out of 4
    - After presentation – 3.33 out of 4
    - Increase of 33%
  - Environmental Law Changes
    - Before presentation – 2.00 out of 4
    - After presentation – 3.4 out of 4
    - Increase of 35%

- This program is held annually to provide the best and most current information regarding timely topics of concern to Texas Commercial Egg Production Operations. Speakers are invited from Texas and other major egg production states to deliver presentations on topics such as the state of Avian Influenza monitoring, information about animal activists, practices to reduce ammonia emissions, animal welfare issues and environmental law changes. Clientele are provided with an evaluation and feedback form to address topic relevance and overall program effectiveness.

Continue to provide expert advice and troubleshooting for the layer industry

2009-2013: Conduct site visits and applied research to assist the Texas Layer Industry with issues such as waste management. (OUTPUT)  

| M Farnell | YES | NO |

- 100% of participants, including those in the pilot projects, indicated satisfaction with the information and feedback received. (OUTPUT)
<table>
<thead>
<tr>
<th>Results/Narrative</th>
<th>2009-2013: 50% of broiler symposium participants indicate an increase in knowledge of specific topics taught at the symposium. <em>(OUTCOME)</em></th>
<th>M Farnell</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide educational programs to the broiler industry through the Texas Broiler Symposium</td>
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<tr>
<td>- Had 171 attendees at this year’s Texas Broiler Symposium</td>
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<tr>
<td>• Overall Satisfaction with the Symposium</td>
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<td>o 4.07 out of 5 – 81%</td>
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<tr>
<td>• Level of Understanding</td>
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<tr>
<td>o Mortality Management</td>
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<tr>
<td>▪ Increase of 33%</td>
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<tr>
<td>o Generator Maintenance</td>
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<tr>
<td>▪ Increase of 53%</td>
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<td></td>
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<tr>
<td>o Water Problems</td>
<td></td>
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<tr>
<td>▪ Increase of 36%</td>
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<tr>
<td>o Animal Welfare</td>
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<tr>
<td>▪ Increase of 14%</td>
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<tr>
<td>o Hatchery Management</td>
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<tr>
<td>▪ Increase of 33%</td>
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<tr>
<td>o Breeder Management</td>
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<tr>
<td>▪ Increase of 43%</td>
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<tr>
<td>o Gut Health</td>
<td></td>
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<tr>
<td>▪ Increase of 28%</td>
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<tr>
<td>o Feed Conversion</td>
<td></td>
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<td></td>
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<tr>
<td>▪ Increase of 34%</td>
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<tr>
<td>- This program is held annually to provide the best and most current information regarding timely topics of concern to Texas broiler industry service people.</td>
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</tr>
<tr>
<td>Continue to provide expert advice and troubleshooting for the broiler industry</td>
<td>2009-2013: Conduct site visits and applied research to assist the Texas Broiler Industry with issues such as waste management. <em>(OUTPUT)</em></td>
<td>M Farnell</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
Results/Narrative
- Visited with a primary broiler breeder in Tennessee to discuss sanitation of fertile eggs and pathogen reduction utilizing new technologies.
- Conducted numerous site visits to poultry farms, hatcheries, live production offices, processing plants, etc.
- Received funding and completed research to determine a natural means of improving the chicken’s response to vaccine.
- Made 18 presentations on broiler related research as a first author or coauthor at scientific and industry meetings.
- Published 2 papers in scientific journals and have two submitted.

Goal 5: Poultry growers increase adoption of best practices for improved competitiveness.

Benchmark: Eight educational meetings regarding best management resources in 2007.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and deliver educational programs to poultry growers concerning husbandry and facilities.</td>
<td>2009–2013: 50% of growers attending educational programs indicate an increase in general knowledge related to husbandry and facilities. (OUTCOME)</td>
<td>M Farnell</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Provide industry clientele with resources to train their personnel.</td>
<td>2009–2013: 50% of Poultry Industry personnel attending programs indicate an increase in knowledge or Intent to Adopt practices recommended for training poultry industry employees. (OUTCOME)</td>
<td>M Farnell</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>

Results/Narrative
- See Broiler Symposium and Egg Clinic data

Results/Narrative
- See Broiler Symposium and Egg Clinic data
Goal 6: 4-H Poultry exhibitors will increase adoption of best practices for exhibition.

Benchmark: NA.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and deliver the embryology program,</td>
<td>2009-2013: Conduct adult leader and teacher training in support of the embryology/Egg to chick program. Measures include: site visits, contact numbers, and number of educational methods (OUTPUT)</td>
<td>M Farnell</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Results/Narrative
- Mailed 30 DVD’s supporting the Egg to Chick Program
- Provide technical support to students and adult mentors

<table>
<thead>
<tr>
<th>Develop and deliver market poultry workshops</th>
<th>2009-2013: Conduct yearly meeting to cover aspects of raising show poultry to novice and other growers. (OUTPUT)</th>
<th>M Farnell</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009-2013: 50% of youth and adult participants increase knowledge related to the raising of poultry for local, county and major poultry shows within Texas. (OUTCOME)</td>
<td>M Farnell</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results/Narrative
- Had 90 attendees including students and parents.
- Each attendee reported an increase in knowledge gained

This program is held annually to provide youth and parents with the most current information regarding the raising and husbandry of poultry for the major livestock shows held in the state. The course is a 6 hour program with presentations and hands-on practice for youth and parents who may be planning to exhibit poultry in the livestock shows. This program is designed for participants who may or may not have any experience raising show poultry. Program topics include a brief introduction to the poultry science department and careers offered by a poultry science degree, housing, brooding and management of market poultry, nutritional requirements and exhibitor responsibilities and validation procedures. Clientele are provided with an evaluation and feedback form to address topic relevance and overall program effectiveness.

| Assist with major livestock poultry shows | 2009-2013: Continue with assistance for major Livestock Shows within Texas (Houston Livestock Show & Rodeo, San Antonio Stock Show & Rodeo, Star of Texas Fair & Rodeo). This includes ordering birds, wing banding and give-out of birds, show set-up, and show data compilation. (OUTPUT) | M Farnell | YES | NO |

Results/Narrative
- HSLR – 453 Poultry Exhibitors
- SALE – 205 Exhibitors
- Wingbanded more than 25,450 turkeys and 49,275 chickens and maintained records for all of them
- Helped poultry shows to continue during an Infectious laryngotracheitis break by coordinating with show officials, the poultry industry and TAHC. Enhanced biosecurity and assisted with terminal shows.
This program is an ongoing effort to provide assistance to the major livestock shows within the state (Star of Texas Fair and Rodeo, San Antonio Livestock Exhibition, Houston Livestock Show and Rodeo) with preparations for market poultry events during the livestock shows. This includes placing all orders for birds used in these shows, wingbanding the birds for exhibitor validation, data and score compilation and show set-up. Poultry Science AgriLife Extension also provides assistance with the many county and regional shows within the state by ordering and wingbanding birds for these events. Assisting with these shows allows the Extension faculty to come into direct contact with possible future students and has proven to be an effective recruiting tool for the Poultry Science Department.

<table>
<thead>
<tr>
<th>Develop and implement the Ag Science Teacher Institute</th>
<th>2009-2013: 50% of Ag Science Teachers attending the Institute indicate an increase in knowledge of the specific topics covered at the Institute. (OUTCOME)</th>
<th>M Farnell</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**Results/Narrative**
- Had approximately 20 adult mentors attend. Assisted Dr. Jason Lee with the program, did not have access to survey results, but the program was well received.

<table>
<thead>
<tr>
<th>Develop and implement the Institute for Youth</th>
<th>2009-2013: 50% of participants indicate an increase in knowledge related to specific topics taught at the Institute for Youth. (OUTCOME)</th>
<th>M Farnell</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**Results/Narrative**
- Had approximately 40 students attend. Assisted Dr. Jason Lee with the program, but did not have access to survey results. The program was well received and the majority of the attendees come to TAMU Poultry Science to pursue a degree.
Agriculture – Food, Fiber, and Green Industries

Imperative 3: Texas producers, agribusiness professionals, and landowners become more knowledgeable on approaches to assess risk and rewards in agriculture and natural resource-related operations, and how to evaluate and implement available risk-management alternatives based on personal and business enterprise goals.

Statement of Support: 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, farmers, ranchers, and organizations, as well as communities that depend upon agriculture, must be better able to weigh the risks and projected impacts of alternative decisions on profitability and competitiveness. This issue was identified in the Extension Data Summits.

Summary of Educational Contacts for Imperative 3

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>895</td>
<td>32,790</td>
<td>120,448</td>
<td>109,766</td>
<td>142,556</td>
</tr>
</tbody>
</table>

Goal 1: Producers and agribusiness professionals increase their knowledge and adoption of risk management alternatives and strategies.

Benchmark: 2007 Master Marketer data revealed a 21% increase in knowledge of 41 graduates and an expected additional income of $33,640 per acre.

<table>
<thead>
<tr>
<th>Strategy</th>
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<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and conduct in-depth risk management training programs, such as Master Marketer, Advanced Topic Series (ATS), The Executive Program for Agricultural Producers (TEPAP), Profitability Workshops, and Personnel Management.</td>
<td>2009-2013: Producers and agribusiness professionals attending in-depth programs increase knowledge of risk management strategies by 10%. (OUTCOME)</td>
<td>M Waller</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Narrative Update

Master Marketer - The 21st Master Marketer program (approximately 70 hours of classroom training over a six-week period of time) was conducted in San Angelo Texas during January/March 2009. Pre-test and post-test scores of subject matter knowledge level indicated a 52.71 % improvement in participant’s scores from the beginning of the Master Marketer program (average pretest score 46.00 %) to the end of the Master Marketer program (average posttest score 70.00 %). In an exit evaluation, participants suggested that were much more confident in how and when to use various risk management/marketing tools. If this increase in knowledge levels and confidence translates to improved marketing performance similar to preceding Master Marketer graduates, we can expect an increase in annual income of approximately $33,762 per year, on average, for each of the 36 graduates of this year's program. If so, these returns would work out to over $1.215 million per year for the graduates of the 2009 Master Marketer program in San Angelo.

A 2.5 year post evaluation of the Lubbock Master Marketer-January-February, 2007 participants was conducted during the summer of 2009 with an approximate 41.18 % response rate. Master Marketer education had an individual impact average of $18,929 or 3.3% of gross farm income for the Lubbock Class compared to the overall average of $33,762 or 4.9% from individuals in all classes held 1996-2007. Results from survey questions indicated an increase 89% in the use of a marketing plan, a 37% increase in determining production costs and incorporating those in the market and, a 49% increase in confidence to manage price and production risk, and a 68% increase in confidence of when and how to use various marketing tools.

Advanced Topic Series

Profitability Workshops – Eight profitability workshops were conducted in District 1 during December and January with a 126 producers attending. Participants indicated farming/ranching more than 250,000 acres (65,400 – irrigated, 82,100 – dryland and 108,900 acres of pasture). Topics covered included; Commodity Outlook, 2009 Projected Crop Profitability, a Farm Bill Update and Alternative Crop Lease Agreements. Results of a pre and post test administered to participants indicated an increase in knowledge gained of 49.97%. Two successful day long profitability workshops were conducted in District 2 for a total of almost 50 producers. The evaluations indicate that producers are being successfully prepared to make decisions that will increase their profitability. Evaluation scores have averaged about 4.6 on a 1 to 5 scale for all the questions. One key question asks if the knowledge and training they are receiving has helped them to make more profitable decisions. For all the workshops in the 3 years of the project, over 95% have answered 4 or 5 on that key question.
Developing a Marketing Plan for the 2009 Feedgrains Crop - A record 54 producers attended a two-day short course held in Amarillo on "Developing a Marketing Plan for the 2009 Feedgrains Crop". Results of a pre and post test administered to participants indicated a gain in knowledge of 51.39%. Participants indicated that they planned to grow/market 9,915,000 bushels (8,831,000 bu. - corn and 1,084,000 bu. – sorghum) of feedgrains in 2009.

Personnel Management Conference - Texas AgriLife Extension Service conducted a two-day conference in Waxahachie, March 3 & 4, to address personnel management issues faced by Agribusinesses. Issues addressed included: Conflict Resolution; Hiring and retaining employees, Labor and Employment Law, Performance Evaluation, Managing Cultural Differences among other topics. Results of a pre & post test administered to participants indicated a 39.2% increase in knowledge gained. Industry partners for the Personnel Management Conference included: TNLA, Texas Cattle Feeders Association, Select Milk Producers, Ag Texas and the Texas Association of Dairymen. The Conference was partially funded by a grant from Southern Region Risk Management Education Center.

Business Plan Development for Agricultural Producers - As part of the 2009 Harris County Master Urban Rancher Program, an extension economist presented a seminar titled "Business Plan Development for Agricultural Producers". A short retrospective post evaluation that included questions related to the level of understanding of topics included in the seminar, and whether the information presented will help the participants make better management decisions was administered.

The first question related to the level of understanding of the components of a farm business plan. Prior to the seminar, participants indicated 67% had a poor, 22% fair, and 11% good understanding of the components of a farm business plan. After the seminar, participants indicated 22% fair, 67% good, and 11% excellent understanding of the components of a farm business plan. The second question related to the level of understanding of how a farm business plan is important to track farm operation production and financial performance and can help to increase profitability. Prior to presentation participants indicated, 44% poor, 33% fair, and 22% good level of understanding. After the seminar, participants indicated 0% poor, 11% fair, 56% good, and 33% excellent level of understanding of the topic. All 100% of the participants agreed with the statement: "The information presented will help me make better decisions".

Grain Grading Schools - Ninety representatives from grain elevators or feedlots attended one-day Grain Grading schools in Amarillo offered by the Texas AgriLife Extension Service for the 20th consecutive year. Participants learned about the importance of grading grain, current FGIS grain standards, identifying damages, etc. Participants rated the conference 8.6 on a 10-point Likert scale. Results of a pre & post test administered to participants indicated a 55.6% increase in knowledge gained. Industry partners for the Grain Grading Schools included the Panhandle Grain and Feed Association and the Texas Cattle Feeders Association.

Oilseed Production Workshops - FARM Assistance coordinator (Klose) partnered with AgriLife Extension agronomists (Morgan & Trostle) to conduct the first of a series of oilseed production workshops across the state. The daylong workshop held in Corpus Christi focused on a number of production and financial considerations for growing various oilseed crops, as well as a discussion of the biodiesel industry and its demand for oilseed production. The workshop concluded with a demonstration of a mobile biodiesel production unit. Thirty-three participants rated their pre and post workshop understanding of each topic, and indicated a 56% gain in knowledge of the workshop materials.

Annual Pecan Growers Conferences - Extension economists assisted Texas and U.S. pecan growers to estimate pecan prices for the 2008 season. After last year’s record crop, prices had weakened significantly, and growers were concerned that last season’s weak markets might extend into the 2008 season. Huge carry-in stocks, a relatively high new crop production estimates, and indications of a weakening U.S. economy might weaken markets into the new season. In addition, increased capital exposure as a result increased production costs indicated that producers were carrying increased financial risks. Market information was needed early to help with financial risk management planning, including credit planning. Market data was analyzed and presentations were made during annual pecan growers conferences in Louisiana, Texas and Mexico. In addition, popular press articles were released and two feature articles were published in the Pecan South magazine: “Crop Down By 181 Million Market Expected to Improve,” Vol. 41, No. 9, November 2008 and “Pecan Price Discovery; Using Historical Supply/Demand Relationships to Estimate Pecan Prices,” Vol. 41, No. 10, December 2008.

QuickBooks Pro for Farmers and Ranchers Workshop - North Region Risk Management Specialists continued the popular QuickBooks Pro for Farmers and Ranchers Workshop during August in Lubbock and Amarillo. The workshops included 14 hours of “hands on” instruction over a two-day period. Topics included writing checks, entering and paying bills, entering and collecting invoices, budgeting, creating management reports, completing payroll and tracking inventories along with many tips on efficient operation of the software. A pre- and post-test were given to all participants indicating a 41% (Lubbock) and 57% (Amarillo) increase in knowledge do to the workshop. On a Likert scale evaluation (1 poor—5 excellent), participants reported that they found; 1) the materials presented very valuable 5 (Lubbock), 4.7 (Amarillo), 2) the teacher’s knowledge of the subject 5 (Lubbock) and (Amarillo), 3) they learned new information 5 (Lubbock) and (Amarillo), 4) whether or not they plan to use what they learned rated 4.8 in (Lubbock) and 4.7 (Amarillo).

Economic Update and Risk Mitigation Conference - Texas AgriLife Extension and the Association of Agricultural Production Executives jointly sponsored a second annual Economic Update and Risk Mitigation Conference on August 13-14, 2009. There were 80 producers from 25 states in attendance. The program focused on longer term impact of the financial crisis on agricultural producers, risk mitigation strategies, and best management practices in the current economic environment. Editors from DTN and Top Producer magazine have run a series of articles and blogs to help disseminate the information to producers throughout the country.
<table>
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<tr>
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<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop educational and technical assistance programs for producer groups or agribusinesses that are considering coordinated production or marketing systems.</td>
<td>2009-2013: Funding obtained to initiate an educational and technical assistance program for producer groups or agribusinesses that are considering ways to manage risk and add value to products.</td>
<td>M. Waller</td>
<td>J. Park</td>
<td>YES</td>
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</table>

**Narrative Update**

Continue to develop meaningful programs to assist producer groups and agribusinesses with decisions on value added and coordinated marketing systems. Additionally, individualized assistance and consultation is coordinated through the Roy B. Davis Cooperative Management Program. Significant efforts include the following:

**Diversification Workshops:**
A series of four six hour workshops have been developed and presented with the goal of improving business profitability and success rates through diversification of operations beyond commodity production. Strategies included value-added production and processing and niche markets. Workshops were designed with the intent of individualized attention for the attendee. Three of the workshops were held in fiscal year 2008, and the 4th workshop was held during 2009 at the Waco BIG conference, the series highlighted changes in the modern food system that can be capitalized on by modern thinking agricultural producers.

Evaluations of the program show that overall 87% of participants were mostly or completely satisfied with the program. Concerning risk management practices, 19% of participants reported having a good or excellent understanding prior to the program increasing to 92% having a good or excellent understanding after the program. 100% of attendants felt that what they learned provides the ability to lead and manage business more effectively.

**Business Consultation:**
Individual business consultation is provided to producer groups contemplating coordinated business activities as well as existing cooperatively owned agribusinesses. Support of these groups is crucial their success, considering the challenges faced by start-up businesses and an adverse business climate in general. In addition, many rural communities recognize that successful business development is a pathway to economic growth. Various organizations have been assisted with projects relating to services like feral hog control, and value-added markets involving milk goats, citrus, and cotton. Six cooperative organizations were assisted with strategic planning between 2008 and 2009. Strategic planning exercises typically involve 16-20 hours of intense consultation with the board of directors.

100% of strategic planning participants have indicated that these programs result in the improved well-being of their businesses.

**State of the Cooperative Industry Survey:**
In collaboration with the Texas Agricultural Cooperative Council, we continue our efforts to document the economic contribution of Texas cooperatives in a manner that will help them to better present their story to members, community leaders, and legislators. The first stage of this project has closed with the publication of “Communicating the Value of Texas Cooperatives: Locally Owned Agricultural Cooperatives”. This publication targeted a subset of TACC members. Plans are underway to extend this further to cooperatives that have a regional scope of business in a survey conducted in early 2010. Our findings indicate that these TACC member cooperatives potentially impact the lives of 1 out of 3 Texans and contribute more than $825 million to Texas GDP. In addition, we show that the cooperative ownership of these businesses results in an additional 12% contributed to Texas GDP than if we assumed a traditional corporate structure.

Other benchmarking studies are underway to assist these businesses with increased performance. In addition to the next state of the industry report, together with TACC, we are currently investigating employee compensation.

**Educational Materials:**
Three issues of the Cooperative Management Letter were published in FY 2009 to more than 200 cooperative managers and directors for each issue. In addition, “Communicating the Value of Texas Cooperatives: Locally Owned Agricultural Cooperatives” has been printed and distributed to managers, directors, and civic leaders with approximately 400 copies in distribution. Supporting brochures and fact sheets have been developed to strengthen this initiative.

Dr. Park is co-chair of the committee to establish a cooperative business community of practice on the national Extension level. The group is planning the transition of educational material for this new medium.

**Leadership Development**
Together with TACC, we are currently developing a training program for new cooperative members and employees in order to foster future ranks of leadership. This new program is to enhance existing director training available through TACC and Extension.
Goal 2: Producers and agribusiness professionals improve their risk assessment and business management skills.

**Benchmark:** In 2006, the Farm Assistance Program completed 159 reports.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct Individual strategic planning exercises with producers through the Financial And Risk Management (FARM) Assistance program statewide to improve risk assessment and business management skills</td>
<td>Participants will indicate improved management ability as well as economic impact through participant surveys. <em>(OUTCOME)</em></td>
<td>M. Waller S. Klose</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Utilize the FARM Assistance database to analyze risk management practices and publish the results of these analyses.</td>
<td>2009–2013: An annual FARM Assistance program report published that illustrates the practices, structure, and characteristics of the most successful producers. <em>(OUTPUT)</em> 2009–2013: At least five applied research articles, Extension bulletins, or fact sheets published each year focusing on specific types of producers or specific issues important to risk management in Texas agriculture. <em>(OUTPUT)</em></td>
<td>M Waller S Klose</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>

**Narrative Update**

The 2009 Fiscal years marks a year of growth in FARM Assistance client participation and analyses. With 179 analyses completed, the team is conducting 30-40% more analyses compared to just 3 years ago. Increased participation is primarily due to the program’s contribution in 2 significant education efforts initiated by the Texas Water Development board, as well as an ongoing partnership with USDA-FSA in Texas.

The outcome of client participation is subjectively measured through participant evaluations. Client assessments (50 respondents) of the FARM Assistance program over the last year indicate a very positive impact on management ability. As a result of participating in the FARM Assistance program, 86% claim a better understanding of the financial aspects of their operation and 86% claim an improved ability to assess the financial risks and potential impacts of strategic decisions they make. One of the objectives of the program is to help managers become more comfortable with formal financial analysis, and 80% indicated that they would be more likely to use a formal financial analysis (like FARM Assistance) to help make decisions in the future. 49 of 50 respondents indicated they would recommend FARM Assistance to another producer. Finally, in responding to a 12 month post survey, 25 participants reported an average $30,000 annual benefit to their operation as a result of their FARM Assistance participation.

The “2009 Texas Agriculture: Road to Success” presenting an in-depth analysis of the FARM Assistance participants was completed in the spring of 2009. The focus of the presentation is a segmentation of the participant operations into three financial success categories and exploring the characteristics of the different groups, as well as examining the success levels by region and farm type. The publication is distributed internally to Extension, to FARM Assistance participants, and to a growing list of industry contacts.

Another effort to reach beyond program participants is the publication series known as “FARM Assistance Focus”. The series is designed to share database insights on topics ranging from property tax analyses to irrigation and drought impacts. Eight such publications were produced in the 2009 fiscal year. In addition, the FARM Assistance staff has generated applied research in other outlets, including the Belt-wide Cotton Conference, the Southern, and Western agricultural economics associations, as well as more targeted analyses of model farms designed to assist County Agriculture Agents communicate and coordinate plans with their county committees. These publications are distributed internally to Extension, to FARM Assistance participants, and to a growing list of industry contacts.
Agriculture – Food, Fiber, and Green Industries

**Imperative 4:** Texas’ green industry sectors, including nursery, floral, landscape, and turf, will move toward their economic potential through demonstrations and evaluation of research-based technology and best management practices that meet economic and competitiveness criteria for business success.

**Statement of Support:** The green industry, including the nursery, floral, landscape, and turf sectors, is a rapidly changing segment of agribusiness with opportunities for expansion in several regions of the state. Technical and economic information is needed on alternative production practices pertaining to culture and nutrition, water quantity and quality, and pest management, etc., to encourage sustainability and additional business development. This goal supports Texas Community Futures Forum (TCFF) issues in economic competitiveness and viability, environmental stewardship, and agricultural diversification.

### Summary of Educational Contacts for Imperative 4

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,104</td>
<td>149,944</td>
<td>370,709</td>
<td>2,072,178</td>
<td>2,222,122</td>
</tr>
</tbody>
</table>

**Goal 1:** Promote the use of environmentally sensitive nutrient management programs in turf and landscape systems by homeowners, public turfgrass and landscape managers, and managers of sports venues.

**Benchmark:** In 2007, 75 turf grass educational programs were provided to Master Gardener and non-Master Gardener audiences reaching over 3,600 participants.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct workshops for sports turf and green space managers.</td>
<td>2009–2013: Sports turf managers participating in turfgrass field days and workshops will increase knowledge and / or adopt best management practices on of water conservation and water audits. (OUTCOME)</td>
<td>T Miller</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

The fifth annual Turfgrass Ecology and Management Short Course provided 36 hours of formal class room training to 38 attendees. Participant surveys indicated improved best management practice use by the participants who reported they managed 27,454 acres of turf over 883 individual sites. Forty nursery and landscape professionals were trained.

As a result of this event 47% of the survey respondents (15 working at 1,648 individual sites over 4,265 acres), indicated their adoption (probable or definite) of BMPs for nutrients and water conservation while 47% indicated practices already in place to accomplish those BMPs. This activity doubled clientele competency to 94% being engaged in environmental BMPs associated with turf management.

Educational field days held for Sports Turf Managers Association; Golf Course Superintendents and State Conference program organized on Sports Turf Management. Knowledge was gained on turfgrass best management practices in an additional 21 programs presented to 1,471 landscape professionals.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Implement the Sports Athletic Field Education (SAFE) program working with managers of sports turf venues.</td>
<td>2009–2013: Participation in demonstration programs by sports venue managers increases 2% per year. (OUTPUT)</td>
<td>T Miller J McAfee</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

Sixteen site visits were made to inspect problems with sports fields.

Irrigation audits on 9 sports fields and one landscape at a professional sports facility.

Nine educational programs on sports field best management practices (inclusive of water use and nutrients) with 454 participants.
Educational field days held for Sports Turf Managers Association; Golf Course Superintendents and State Conference program organized on Sports Turf Management. Developed preliminary evaluation criteria for CEA handling of inquiries as to sports turf agronomic issues. A representative evaluation of the one field day recorded 67% of attendants planned to adopt best management practices presented in the field day.

| Conduct educational programming for turfgrass professionals and homeowners on the management and selection of water-efficient landscapes and irrigation systems. | 2009–2013: Increase knowledge of turfgrass professionals and homeowners by 2% per year relative to the efficient use of water through audits and other educational programming. (OUTCOME) | T Miller | YES | NO

**Results/Narrative**

Twenty three Master Gardener Training programs for 32 different counties trained 752 new master gardeners in efficient water use. Chapter 8 in the 2009 revised Master Gardener Handbook provided reference material for efficient water use on turf for all Texas Master Gardeners.

Representative surveys indicated adoption levels (probable or definite) of 78 to 85% for turfgrass BMPs in general, and those specifically relating to nutrients and water conservation. Another 3- to 21% indicated practices already in place to accomplish those BMPs. This Master Gardener volunteer knowledge gained will promote environmentally sensitive solutions in turf/lawn management within their county. Greater Houston Region water purveyors, industry and county CEAs organized to coordinate varied and multiple efforts on consumer water conservation.
Goal 2: Nursery, floral, and landscape professionals improve their knowledge of alternative production practices and management systems to improve quality, profitability, and sustainability.

Benchmark: In 2007, participants revealed a 40.0% increase in knowledge on items taught at the Taller-MIP-IPM Workshop. These changes were in the area of basic IPM, sanitation and cultural practices, basic biology and ecology of pests, disease management, and basic pesticide toxicology.

<table>
<thead>
<tr>
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<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct workshops and other educational methods for nursery, floral and landscape professionals, focusing on sustainable principles and practices, with special emphasis on risk management.</td>
<td>2009-2013: 55% of participants increase knowledge relative to sustainable principles and practices, with special emphasis on risk management.</td>
<td>D Welsh D Wilkerson C Hall</td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>

Results/Narrative
Don Wilkerson presented an Earth-Kind® Landscaping seminar to 28 landscape/nursery professionals at the Texas Nursery and Landscape Association – PreExpo Seminar on August 14, 2009 in Dallas. The audience responded to a retrospective evaluation instrument which documented that over 55% of participants increased knowledge relative to sustainable principles and practices, with special emphasis on risk management. Average percent increase in knowledge for specific teaching points include: 23% increase regarding “understanding the value of differentiating your firm from the competition to enhance profitability;” 22% increase regarding “understanding how sustainability can assist in differentiating your firm;” and 25% increase regarding “how sustainable production practices can assist in preserving and protecting natural resources.” Adoption of practices was measured, as well, and indicated: 93% of participants intend on to “use sustainability to differentiate your firm” and 96% intend to “use sustainable production practices to assist in preserving and protecting natural resources.” Of the participants, 27 of 28 expected dollar savings by implementing sustainable production practices. Savings of over $5,000 was indicated by 82% of respondents.

The nursery industry ranks as the second to fourth rated agriculture industry in Texas depending on the sources. In March of 2007, it was the fourth ranking industry with a value of $1.3 billion behind only cattle, cotton and poultry. Invasive pests, like diseases and insects, can be devastating. The lack of identification can cause producers to treat with the wrong pesticide or misidentify a problem. Losses can also occur when plant shipments are quarantined and cannot be sold. The spread of chilli thrips across the state has been slow. However, chilli thrips have appeared to move away from the Harris County region to other parts of the state. Dr. Ludwig was able to consult with M.D. Anderson to bring their rose garden back into production after a lost fall season in 2008. The volunteers distribute 50 to 100 roses per day so even a conservative estimate of $8.00 per rose shows that Dr. Ludwig's efforts have saved M.D. Anderson $400 to $800 per day during the growing season (March through October). Dr. Bográn worked with a grower in Central Texas on a problem with two varieties of Allamanda (Yellow Bell or Buttercup Flower). The grower was treating the foliage with a fungicide because he thought it was a plant disease. Dr. Bográn was able to identify the chilli thrips and provide a proper course of treatment. The grower estimated that Dr. Bográn saved them $250,000 in plant losses with Dr. Bográn's diagnosis and control recommendations. In addition, Scott Ludwig worked with Dr. Kevin Ong (Plant Pathology), in identifying a chilli thrips problem in Erath County. The end result was that the nursery was able to prevent $217,000 in lost sales due to thrips damage.

Evaluation of Taller MIP (IPM Workshop) a bilingual worker education program for the Texas greenhouse and nursery industry. The majority of field workers in the Texas floriculture and nursery industry are of Hispanic origin, have little formal education (65% did not complete high school, 18% did not complete 6th grade), and lack simple yet essential technical knowledge required in plant health maintenance. Pest and disease problems often go unnoticed and untreated until they reach levels which trigger intensive pesticide applications that could be avoided by early pest detection and regular sanitation practices within Integrated Pest Management (IPM) programs. To facilitate adoption of IPM strategies that reduce pest control-associated risks, we have developed an IPM education program targeted at Hispanic (in Spanish) and other field workers (in English). This training program (Taller MIP-IPM Workshop) teaches basic concepts and their application, at an audience-appropriate level which considers the socioeconomic, cultural and educational background of participants. The program subjects include basic plant growth and health, basic biology and ecology of plants, arthropods and pathogens, pest/disease avoidance, prevention, identification and monitoring, pesticide safety and application effectiveness and the integration of pest management tools. The following is a brief summary of evaluation results of educational programs conducted between January and August, 2009.

A total of 4 educational programs have been delivered in the reporting period including 104 participants and representing a total of 520 contact hours. Most participants were originally from Mexico but a minority was from other Latin American countries. A post-pre evaluation instrument was used to assess participant's level of understanding of the concepts covered in the training program in two of the sessions. Participants were asked to describe their level of understanding (low, medium, high, excellent) before and after the program. Topics were grouped into 5 categories as follows:

- Basic IPM concepts
- Sanitation and cultural practices
- Basic biology and ecology of pests and pathogens
Insect pest management  
Disease management

On average, for the 17 questions included in the evaluation instrument, the percentage of participants with high or excellent understanding of the topics increased from 18.3% before the program (range 5.4% - 54.0%) to 87.6% after the program (range 70.3% - 97.3%). Table 1 shows average responses and change in participants responses as a result of the training program. On average the self-described level of understanding increased 1.4 points (in a 1-4 scale or 34.1%), indicating a highly positive impact of the training program.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Before</th>
<th>After</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IPM concept</td>
<td>1.8</td>
<td>3.2</td>
<td>+1.4</td>
</tr>
<tr>
<td>2 Pest and disease prevention tactics</td>
<td>1.9</td>
<td>3.2</td>
<td>+1.4</td>
</tr>
<tr>
<td>3 the importance of monitoring</td>
<td>1.9</td>
<td>3.2</td>
<td>+1.4</td>
</tr>
<tr>
<td>4 Importance of good diagnosis of pest and diseases</td>
<td>1.7</td>
<td>3.4</td>
<td>+1.6</td>
</tr>
<tr>
<td>5 How a pest population increases</td>
<td>1.8</td>
<td>3.4</td>
<td>+1.6</td>
</tr>
<tr>
<td>6 Insect development and metamorphosis</td>
<td>1.7</td>
<td>3.1</td>
<td>+1.4</td>
</tr>
<tr>
<td>7 Basic requirements for plant growth</td>
<td>2.2</td>
<td>3.4</td>
<td>+1.2</td>
</tr>
<tr>
<td>8 When plants need water</td>
<td>2.5</td>
<td>3.6</td>
<td>+1.1</td>
</tr>
<tr>
<td>9 Importance of sanitation</td>
<td>2.3</td>
<td>3.4</td>
<td>+1.1</td>
</tr>
<tr>
<td>10 Use of yellow sticky cards to detect pests</td>
<td>1.8</td>
<td>3.6</td>
<td>+1.8</td>
</tr>
<tr>
<td>11 Difference between chewing and sucking insects</td>
<td>1.6</td>
<td>3.1</td>
<td>+1.5</td>
</tr>
<tr>
<td>12 Aphids life cycle</td>
<td>1.6</td>
<td>2.8</td>
<td>+1.2</td>
</tr>
<tr>
<td>13 Mealybugs life cycle</td>
<td>1.7</td>
<td>2.9</td>
<td>+1.2</td>
</tr>
<tr>
<td>14 Disease cycle concept</td>
<td>1.7</td>
<td>3.1</td>
<td>+1.3</td>
</tr>
<tr>
<td>15 Disease triangle concept</td>
<td>1.5</td>
<td>2.9</td>
<td>+1.4</td>
</tr>
<tr>
<td>16 Conditions that favor diseases</td>
<td>1.7</td>
<td>3.0</td>
<td>+1.3</td>
</tr>
<tr>
<td>17 Causes of plant diseases</td>
<td>2.0</td>
<td>3.2</td>
<td>+1.2</td>
</tr>
</tbody>
</table>
Goal 3: Promoting agricultural awareness and the development of positive relationships among youth and caring adults.

**Benchmark:** In 2007, 26 new JMG programs were implemented in their community.

<table>
<thead>
<tr>
<th>Strategy</th>
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<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement Junior Master Gardener Program in new areas.</td>
<td>2009-2013: 55% of adult participants increase knowledge relative to garden practices and youth garden education (Junior Master Gardener®); and 50% of adult participants plan to adopt/begin youth gardening education programs. (OUTCOME)</td>
<td>D Welsh L Whittlesey</td>
<td></td>
<td>YES NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

**Junior Master Gardener Teacher Training**

Lisa Whittlesey and Randy Seagrave conducted Junior Master Gardener (JMG) Teacher Trainings in Austin and Corpus Christi in 2009. The JMG program worked with the Texas Education Agency Regional Service Centers to conduct 6-hour training programs for teachers to implement the Junior Master Gardener program in schools. The programs provide extensive training in core science content areas to increase science competencies and knowledge for teachers teaching grades 3-6. The goal of the training was to empower teachers to feel more confident in teaching science, highlight Junior Master Gardener activities for use in the classroom and how activities relate to TEKS, increase teacher’s knowledge related to Earth-Kind gardens and access to local AgriLife Extension resources, and compel adoption of practices in the classroom to improve science education for youth. Twenty-nine teachers attended two training programs. A retrospective post evaluation was administered to participants of the JMG teacher training.

The results include:

<table>
<thead>
<tr>
<th>Change in Levels of Understanding</th>
<th>%Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of plant part and plant needs</td>
<td>20.13</td>
</tr>
<tr>
<td>Knowledge of insect behaviors and habitats</td>
<td>6.66</td>
</tr>
<tr>
<td>Knowledge of how to collect insects</td>
<td>36.44</td>
</tr>
<tr>
<td>Knowledge of how to integrate science with other subjects such as math, language arts, and social studies</td>
<td>31.73</td>
</tr>
<tr>
<td>Knowledge of plant botanical terms used for identification</td>
<td>42.23</td>
</tr>
<tr>
<td>Knowledge of different types of plant root systems</td>
<td>28.19</td>
</tr>
<tr>
<td>Knowledge of how to use garden or landscape as outdoor classroom</td>
<td>76.05</td>
</tr>
<tr>
<td>Knowledge of resources to assist with school garden programs</td>
<td>101.61</td>
</tr>
<tr>
<td>Confidence in building a garden bed</td>
<td>65.74</td>
</tr>
<tr>
<td>Importance of mulch in the garden</td>
<td>32.26</td>
</tr>
<tr>
<td>Soil preparation techniques to prepare beds for planting</td>
<td>54.00</td>
</tr>
<tr>
<td>Knowledge of Texas AgriLife Extension Service programs</td>
<td>63.06</td>
</tr>
</tbody>
</table>

**Percent of Respondents with Probable or Definite Intent to Adopt Practices**

- 21 of 29 (72%) will use JMG curricula. 4 respondents have already adopted this practice.
- 16 of 28 (57%) will start a JMG program. 1 respondents have already adopted this practice.
- 14 of 28 (50%) will have students work toward JMG certification.
- 25 of 28 (89%) will utilize activities learned in workshop in their curricula for next year.
- 26 of 28 (92%) will share what they learned with others. 1 respondent has already adopted this practice.
- 24 of 26 (92%) will integrate garden science with language arts, math, social studies, and other subjects. 1 respondent has already adopted this practice.
- 16 of 26 (61%) will build or re-design landscape at my school. 1 respondent has already adopted this practice.
- 13 of 26 (50%) will build vegetable garden at their school. 1 respondents have already adopted this practice.
- 8 of 24 (33%) will use drip irrigation and/or rainwater harvesting in gardens at their school.
- 21 of 27 (77%) will use proper plant spacing and mulch.
- 19 of 26 (73%) will implement garden design plan and timeline created at the workshop.
- 21 of 27 (77%) will utilize County Extension office to assist them with their program. 1 respondent has already adopted this practice.
- 20 of 27 (74%) will utilize Master Gardener volunteers to assist them their program. 1 respondent has already adopted this practice.
- 24 of 29 (82%) will attend a follow up training and professional development if offered. 1 respondent has already adopted this practice.
**Goal 4:** Turfgrass producers increase their knowledge related to making cost of production estimates and pricing to improve profitability.

**Benchmark:** NA

<table>
<thead>
<tr>
<th>Strategy</th>
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<th>Comments/Notes</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Provide training to turfgrass producers that will enable them to interpret and develop cost of production estimates for use as a basis for pricing, investment and risk management decision-making.</td>
<td>2009: Workshops will be held for producers to provide hands-on training in the development of cost of production estimates and pricing tools. Monthly surveys will be carried out to provide producers market information on a timely basis. A publication will be developed to help producers utilize price information and make sound pricing and production decisions. (OUTCOME)</td>
<td>L. Falconer M. Waller</td>
<td>Workshops will continue to be offered in 2009, and price publication will be completed in 2009.</td>
<td>YES NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

- **Budgeting Workshops for Turfgrass Producers** – During the month of May, 2009 extension agricultural economics faculty presented to budgeting workshops for turfgrass producers. The producers attending the workshop indicated that they manage 1147 acres of turfgrass, which represents in excess of 3.1% of the total turfgrass acres harvested in Texas.

  - These workshops for successful in increasing the level of understanding that the participants have in the use of budgeting concepts in managing a turfgrass operation. 100% of the participants either agreed or strongly agreed with the following statements: 1) I have a better understanding of the process of how to develop an enterprise budget. 2) I have a better understanding of how to use enterprise budgets in making management decisions. 3) I understand how non-cash costs such as depreciation and opportunity costs can be incorporated into enterprise budgets. 4) I understand the difference between fixed and variable costs and how they can impact production decisions. 5) I feel comfortable in using enterprise budget spreadsheets.

  - This workshops were also successful in convincing the participants to adopt recommended budgeting and financial management practices in their operation. 100% of the participants indicated that they would prepare enterprise budgets that are specific to their operation, include non-cash as well as direct costs in their enterprise budgets and use their enterprise budgets for purposes other than acquiring financing from lending institutions.
Agriculture – Food, Fiber, and Green Industries

Imperative 5: Through pesticide safety education, licensed and unlicensed pesticide users (including farmers, ranchers, pest control businesses, and the general public) will understand and adopt safer pesticide and nonchemical management methods for managing pests and will be able to continue their pursuit of business enterprises and employment.

Statement of Support: State regulations require farmers, ranchers, structural pest control businesses, government agency employees, political subdivision employees, and others who apply pesticides in their business to receive periodic training to maintain their state licenses. Training also is beneficial in preparing them to take licensing exams. This goal focuses on improving the knowledge of pesticide applicators regarding their own safety and the safety of others while protecting their business investment.

Summary of Educational Contacts for Imperative 5

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>436</td>
<td>14,385</td>
<td>50,345</td>
<td>149,122</td>
<td>163,507</td>
</tr>
</tbody>
</table>

Goal 1: The knowledge and skills of pesticide users in Texas will increase while they maintain licenses to maintain their business ventures.

Benchmark: Texas AgriLife Extension Service specialists and CEAs in cooperation with other entities (organizations, businesses, volunteers...) conducted more than 305 PSEP certification and recertification activities statewide, as reported by the TExAS system.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Conduct quality and relevant Pesticide Safety Education Program (PSEP) trainings that support the licensing activities of Texas' licensing agency (Structural Pest Control and Public Health), and encourage the safe application of pest control products.</td>
<td>2009–2013: Number of specialized trainings maintained at current levels. (OUTPUT) 2009-2013: 55% Participants in specialized trainings conducted by PSEP specialists demonstrate an increase in knowledge. (OUTCOME) 2009-2013: Participants in CEA led Pesticide Safety programs will report an adoption of practices or behavior related the safe use of pesticides. (OUTCOME)</td>
<td>D Renchie</td>
<td>D Renchie</td>
<td>D Renchie ANR RPD's</td>
</tr>
</tbody>
</table>

Results/Narrative: AES specialists increased the number and quality of applicator certification courses for all audiences served. During this reporting period, 70 courses were conducted at which 749 applicators seeking licenses with the Texas Department of Agriculture (TDA), Structural Pest Control Service (SPCS), and the Texas Department of State Health Services (TDSHS) received more than 5,000 contact hours of category specific pesticide safety education training.

Data collected during the applicator certification course substantiate the increase in knowledge gained by participants in all categories. In addition, data reported by CEAs through direct submission and the instruments in the TeXas system indicate applicators and other participants indicated they will adopt a practice or modify a behavior relating to Pesticide Safety Education Program[s] (PSEP).

Establish and maintain cooperative relationships with organizations to enhance Pesticide Safety Education Program activities. | 2009–2013: Licensing agencies contacted regularly by PSEP leadership to assure PSEP program curriculum is relevant. (OUTPUT) | D Renchie | YES NO |

Results/Narrative: During the reporting period, AES specialists met quarterly with PSEP staff from the TDA, SPCS, TDSHS and allied industry representatives to discuss federal and state issues, regulations, and actions affecting the regulated community in Texas, our EPA Region, the USDA Southern Region, and nationally. In addition, daily communication(s) were routine with each of the entities described above to ensure smooth operation of the states certification and rectification programs and activities conducted by Texas AgriLife CEAs and specialists. Also, the AES Extension Program Leader (Dr. Don Renchie) participated in the National PSEP Conference during this reporting period.
Goal 2: Develop and conduct professional development programs for county and specialist faculty so they will be more knowledgeable in providing and managing continuing education programs that support pesticide applicator licensing.


<table>
<thead>
<tr>
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<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update and distribute relevant educational material, including manuals and Web-based programs, to county Extension faculty.</td>
<td>2009–2013: Ninety percent of new agricultural and natural resource county agents trained on PSEP within 12 months of employment. (OUTPUT)</td>
<td>D Renchie</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Results/Narrative
To facilitate the on-boarding of new AgriLife Extension specialists and CEAs, AES specialists participated in the fall and spring orientation programs. Information was discussed and distributed to assist the new team members, so they could hit the ground running effectively.

PSEP leadership will coordinate trainings with regional program directors and provide annual updates on regulations and programmatic issues. | 2009–2013: Centra Symposium trainings held each summer and made available to all county Extension agents with responsibilities in this area, resulting in knowledge gain of County faculty. (OUTPUT) | D Renchie | YES | NO |

Results/Narrative
AES specialists continued to provide professional development programs for all AgriLife Extension faculty involved in PSEP activities. Two Centra Symposia were held during the reporting period.
**Goal 3:** Encourage adoption of pesticide safety for pest- and pesticide-sensitive institutions, including schools, child care facilities, hospitals, nursing care facilities, and others.

**Benchmark:** In 2007, 148 participants responded to the School IPM Coordinator Training. Major outcomes included increased knowledge in IPM practices, paperwork requirements, and a better understanding of their role is as the school’s IPM Coordinator.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Conduct annual mandatory and advanced IPM regional trainings for school IPM coordinators and other school IPM stakeholders.</td>
<td>2009–2013: Knowledge and implementation of IPM concepts measured by exam and follow-up surveys, with knowledge gain of 5%. (OUTCOME)</td>
<td>C Allen M Merchant D Renchie</td>
<td></td>
<td>YES NO</td>
</tr>
</tbody>
</table>

### Results/Narrative

The school IPM team offered one two-day regional workshops, plus one other regional workshops hosted by the Extension Program Specialist and Pesticide Safety Coordinator in Lumberton between January 2009 and August 2009. Region 2 and Region 9 Educational Service Centers also contracted with the Extension Program Specialist (Hurley) to conduct day one IPM coordinators trainings. 82 IPM Coordinators, School Maintenance Facility Directors, Pest Management Professionals were trained on the first day of IPM Coordinator training. Coordinators learn how to prevent pests from entering their buildings so that the children will be safe. School IPM covers more than pest control, it aids in keeping buildings safe from a variety of problems, even the flu.

Other educational methods offered by the school IPM team:
- Two major issues and one mini edition of the *School Pest News*. Readership currently is at 1,147 IPM coordinators, pest management professionals and other interest stakeholders.
- Maintaining an up to date website [http://schoolipm.tamu.edu](http://schoolipm.tamu.edu)
- Attending state and regional conferences speaking about school IPM. The readership of the *School Pest News* continues to increase by 15% each year through state and national meetings.
- Ms. Hurley attended the National School Plant Management Association meeting as a presenter and exhibitor. Over 100 copies of school IPM management plans were handed out to conference attendees.

A total of 82 participants responded to the survey on day one and 29 participants provided responses to the survey on day two. All results are below.

#### Day 1 results

The first section of results for day one asked participants for their perception of knowledge change based on the program. The results are in table 1.

### Table 1. Ranked mean value1 of participants’ perception of their level of knowledge as a result of the School IPM Program.

<table>
<thead>
<tr>
<th>Perceptual Knowledge Based Change</th>
<th>BEFORE - Mean</th>
<th>S.D.</th>
<th>AFTER - Mean</th>
<th>S.D.</th>
<th>Change2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I understand my role as IPM Coordinator.</td>
<td>3.08</td>
<td>1.34</td>
<td>4.44</td>
<td>.67</td>
<td>1.52</td>
</tr>
<tr>
<td>I understand the principles of IPM practices.</td>
<td>2.90</td>
<td>1.11</td>
<td>4.33</td>
<td>.69</td>
<td>1.43</td>
</tr>
<tr>
<td>I understand the paperwork requirements for pesticide applications for yellow and red list products.</td>
<td>2.70</td>
<td>1.36</td>
<td>4.28</td>
<td>.73</td>
<td>1.71</td>
</tr>
<tr>
<td>I feel comfortable that I have the skills I need to implement an IPM program within my district.</td>
<td>2.95</td>
<td>1.30</td>
<td>4.35</td>
<td>.73</td>
<td>1.41</td>
</tr>
<tr>
<td>I understand when you must notify building occupants about pesticide applications.</td>
<td>3.33</td>
<td>1.29</td>
<td>4.66</td>
<td>.53</td>
<td>1.29</td>
</tr>
</tbody>
</table>

1Likert scale was defined as: 1 = not at all, 2 = slightly, 3 = Somewhat, 4 = Mostly, and 5 = Completely.

2Mean change was determined by the following formula: After mean value – Before mean Value

Overall participant’s level of knowledge was increased in all areas of instruction.

The next set of questions asked items related to usefulness and satisfaction of the information provided for each topic. The results are as follows:
• 79 (96.3%) said the information on Texas Laws and Regulations for School IPM was “very useful” or “highly useful.”
• 81 (98.8%) said the information on IPM Principles and tactics was “very useful” or “highly useful.”
• 77 (96.3%) said the information on understanding the difference between green, yellow, and red producers was “very useful” or “highly useful.”
• 80 (96.3%) said the information presented on understanding pesticide labels was “very useful” or “highly useful.”

It is also worth noting that 78 (97.5%) participants were “mostly” or completely satisfied with the program. Of the 81 respondents 41 (50%) of them were first time attendees to a school IPM Coordinator training.

**Day 2 results.** The first section of results for day 2 asked participants for their perception of knowledge change based on the program. (New interpretation results from Extension Education using one of their custom scanning forms.)

**Number of Participants:** 30
**Percentages based on 29 respondents to the survey (Response rate = 97%).**

**Overall:**
• 100% of respondents were mostly or completely satisfied with the activity.

**Content:**
• 97% of respondents were mostly or completely satisfied with the information being what they expected.
• 100% of respondents were mostly or completely satisfied with the information being accurate.
• 100% of respondents were mostly or completely satisfied with the information being easy to understand.
• 100% of respondents were mostly or completely satisfied with the completeness of information given on each topic.
• 93% of respondents were mostly or completely satisfied with the timeliness of information given on each topic.
• 96% of respondents were mostly or completely satisfied with the helpfulness of the information in decisions about your own situation.
• 100% of respondents were mostly or completely satisfied with the quality of course materials.
• 100% of respondents were mostly or completely satisfied with the relevance of the examples used.

**Anticipated Changes & Economic Impact:**
• 96% of respondents plan to take actions or make changes based on the information from this activity.
• 89% of respondents anticipate benefiting economically as a direct result of what they learned from this Extension activity.

**Value of Activity:**
• 100% of respondents said that the information and programs provided by Extension were quite or extremely valuable to them.
• 100% of respondents would recommend this activity to others.
• 100% of respondents would attend another subject offered by Extension if it addressed a specific need or interest of their

**Level of Understanding: (% of respondents who increased their understanding of.)**
• (68%) – I understand the different types of bees.
• (79%) – I understand the difference between monitoring and sampling.
• (26%) – I can identify a yellow jacket from a honey bee.
• (66%) – I understand my role of IPM Coordinator.
• (44%) – I know the difference between an annual inspection and monthly inspection
• (62%) – I can explain integrated pest management to my school staff.
• (74%) – I know what to do when a bee swarm is reported.
• (54%) – I can identify a venomous insect.
• (56%) – When to post for indoor treatments.
• (68%) – I can identify at least three different types of Green Category Products

**Plans to Adopt: (% of respondents who definitely will adopt the following practices)**
• (55%) – Updating my IPM policy statement.
• (36%) – Train teachers and staff about IPM.
• (48%) – Implement IPM plans into my program.
• (55%) – Will post outdoor notification signs for each application.
• (50%) – Will adopt thresholds for bees and wasps.
• (64%) – Will organize my IPM records.
• (64%) – Will inspect buildings on an annual basis for IPM needs
AES specialists (Dr. Don Renchie) continued to work collaboratively with other faculty (Dr. Mike Merchant and Ms. Janet Hurley) to develop educational materials and conduct certification programs for Texas public school employees engaged in all phases of pest management. Four regional training programs were conducted at which 105 school district employees and commercial applicators from across the state received more than 1,680 contact hours of training in PSEP.

| Maintain regular communication with school IPM facility managers, school IPM stakeholders, and interested agencies via newsletters, email, and letters. | 2009–2013: At least 50% of all school districts annually reached via periodic electronic or print materials. (OUTPUT) | C Allen M Merchant D Renchie | YES | NO |

**Results/Narrative**

The 2009 website statistics are based on January – August 2009, the http://schoolipm.tamu.edu website received the following: **Successful requests for pages:** 286,237; **Distinct files requested:** 3,686; **Distinct hosts served:** 40,395; **Data transferred:** 11.87 gigabytes **Average data transferred per day:** 48.66 megabytes. The School IPM newsletter goes to every school district. The School IPM program has now reached 69% of the school districts directly with trainings.

| Develop IPM techniques and innovative training materials for institutions wanting to improve pest control while minimizing risks for employees and clientele for onsite visits. | 2009–2013: 5% percent increase in understanding or adoption of key IPM concepts/measures achieved among institutional decision-makers. (OUTCOME) | C Allen M Merchant D Renchie | YES | NO |

**Results/Narrative**

58 school districts that attended our training in 2009 and 277,094 school children attend schools in those districts.
Goal 4: Increase urban pest control and safety education among urban pesticide applicators, including those who provide pest control for structures, turfgrass, and landscapes.

Benchmark: In 2007, 13 pesticide applicator trainings (excluding school IPM training programs), presenting approximately 13 talks for 1007 participants (2,385 contact hours).

<table>
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<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
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<tbody>
<tr>
<td>Conduct regular, Extension-sponsored pest management training programs for structural and landscape pesticide applicators.</td>
<td>2009–2013: Existing pest management workshops for urban pesticide applicators conducted and quality maintained, as measured by meeting attendance and post-program evaluations. Knowledge and skills increase by 15%. (OUTCOME)</td>
<td>D Renchie</td>
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<td>YES</td>
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<td>C Sansone</td>
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Results/Narrative

Since 2002, *Paratrechina sp. near pubens* (a.k.a., Rasberry Crazy Ant or RCA) has been creating havoc in many residential and commercial areas in the southeastern part of Harris County. This ant currently infests areas of Brazoria, Galveston, Harris, Jefferson, Liberty, Montgomery, and Wharton counties. Please refer to this link for additional information, [http://urbanentomology.tamu.edu/ants/exotic_tx.cfm](http://urbanentomology.tamu.edu/ants/exotic_tx.cfm). With the increased publicity about this ant and the recently approved use of Termidor® SC Termiticide/Insecticide for control of this crazy ant species in the state of Texas under the Crisis Exemption pursuant to Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act, a training session on the recent research conducted on this species would increase the knowledge base to give an informative answer. A series of question asked about increasing their level of understanding about identification of ants, the best source of information, the importance of the ant as a pest insect and submission of samples. The increase in knowledge was consistent for the whole series ranging from an increase of 94 to 100%. The level of knowledge generally increased for 70% of the audience one level and 30% increased knowledge levels by two or three levels.

A series of questions was also asked about a change in behavior for the clientele. Behaviors measured were the following:

a) Make an effort in the county to educate and alert clientele about this exotic invasive pest ant?

b) Report suspicious ant problems, and have the ants identified by a specialist?

c) Submit specimens for identification to the Center for Structural and Urban Entomology for confirmation in order that the county can be added to the Section 18 emergency use label for the expanded use pattern for Termidor (fipronil)?

d) If Rasberry crazy ants are detected, advise the practice of good sanitation techniques by removing potential nesting sites, such as piles of debris (mulch, wood, etc.) from the property.

32% had already adopted the practices mention above and 65% definitely would adopt the above practices.

Jan-Aug, 2009. Recorded 1187 contacts over four different pesticide applicator training programs. These programs included:

- Invited presentations
- B&G Chem and Equipment Co. workshop – Arlington. 2 classes (ACE prep training 6 hrs/L&O training 1 hr) 122 contacts/246 contact hours
- B&G Chem and Equipment Co. workshop—San Antonio 1 class (L&O training) 75 contacts/75 contact hours
- TAMU Annual Urban Pest Management Conference 800 contacts/7200 contact hours (I report these total training hours, which represent the results of many speakers, for Dr. Gold, the organizer of the event). Spring IPM Conference, Dallas REC. 150 contacts/750 contact hours. Participants rated five topics (managing sap feeders, reducing pesticide environmental risks, urban wildlife, new tools in pest management and calibration of sprayers) for gaining new information. Ratings ranged from 54% gained new information for new pest control tools to 80% for managing sap feeding insects. Average satisfaction rating for the day’s training was 3.6 on a 5 point scale (where 1 was poor and 5 was excellent). In addition Merchant contributed to pesticide applicator training via trade magazine articles (3 state and 2 national) and a blog directed to the pest control industry in Texas. Insects in the City blog had 60 subscribers and (since April when statistics started) 5,740 visits and 7,396 page views.

AES specialists worked cooperatively with Dr. Merchant and Ms. Hurley, as well as numerous others from industry and allied associations to develop, conduct, and participate in certification and recertification programs statewide. data collected by course sponsors consistently indicated participant knowledge gain in the domains relating to PSEP.

Minimize the economic and environmental costs of urban pest control for Texans.

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<th>Comments/Notes</th>
<th>Measure Met</th>
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<tr>
<td></td>
<td>2009–2013: Measurable reductions achieved in costs or environmental risks associated with urban pest management practices. Case study to be conducted will reveal reduced costs of 10%. (OUTCOME)</td>
<td>C Sansone</td>
<td></td>
<td>YES</td>
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<td></td>
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<td>C Allen</td>
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<td></td>
<td></td>
<td>D Renchie</td>
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Results/Narrative

The School IPM program conducted two trainings on writing bid specifications for an IPM program. These specifications deal not only with pest control but managing risks with pesticides and implementation of the IPM program. As a result of this training, Lewisville ISD was able to save $23,000 on their next contract (12% cost savings). This cost
savings came from a review of the districts IPM program, what had been in the prior bid specifications and a review of the contract by the current IPM Coordinator to eliminate non-essential items.

The School IPM program has been working with Plano ISD for several years. In 2007, we assisted this school district with getting national recognition for their IPM program by putting them through the IPM Star Certification program through the IPM Institute of North America. Mr. David Lewis, Responsible IPM Coordinator has been utilizing the cost calculator in the original Excel spreadsheet format to ensure that all 85 campuses within Plano are maintained at a level to reduce pest populations and pesticide applications. Since using the cost calculator David, was able to reduce 25% of the pest complaints by getting proper work order’s to the maintenance department to repair door sweeps where crawling insects and mice tend to invade thus reducing pesticide use. Based on the results for the cost calculator and the number of problems Plano were having with Sigler Elementary School and Clark High School (9th and 10th grades) these two buildings were designated to be demolished and new buildings placed in their places. The newer buildings should result in reduced economic costs and lost student hours due to pest problems. Also, Plano ISD employees now wait two hours after sunset before turning on lights and two hours prior to sunrise before turning the lights off to keep flying pest numbers down. This simple procedure has reduced calls coming into the IPM department by 30%.
Agriculture – Food, Fiber, and Green Industries

Imperative 6: Small-scale agricultural operators and commercial producers in rural and suburban areas will become more knowledgeable in effectively identifying and evaluating diversification strategies for risk mitigation and improved economic sustainability based on total management goals and optimal resource-base use.

Statement of Support: Farms and ranches with less than $20,000 of cash receipts make up almost 80% of Texas operations in production agriculture. Recently, this segment has been expanding around urban population centers due to purchases of small acreage tracts. Extension has the opportunity to provide basic agricultural education and awareness to these families that have multiple objectives. This goal addresses an Extension Data Summit issue.

Summary of Educational Contacts for Imperative 6

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>159</td>
<td>134,165</td>
<td>142,403</td>
<td>31,656</td>
<td>165,821</td>
</tr>
</tbody>
</table>

Goal: Small-scale agricultural operators and landowners increase their knowledge of traditional and organic production, as well as management alternatives to improve quality of life, sustainability, and environmental practices.

Benchmark: In 2007, over 8,000 small and new landowners participated in educational programs. Common practices that are being adopted include: livestock types to purchase for their land, taxing options, and plant identification.

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</thead>
<tbody>
<tr>
<td>Pasture and land management (PALMAN) workshop conducted for absentee landowners and those new to agriculture.</td>
<td>2009–2013: Landowners attending PALMAN workshop increase knowledge on best management practices by 10%. (OUTCOME)</td>
<td>T Miller</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Results/Narrative</td>
<td>In the first Pasture and Livestock Management Workshop at Overton, 33 of the 39 attendees agreed that the topics covered in the workshop would positively impact the economics of their operation. In the second PALMAN workshop, 17 of 25 attendees agreed that the topics covered in the workshop would positively impact the economics of their operation.</td>
<td></td>
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<tr>
<td>Plan and develop a Web-based delivery system to address the needs of the targeted audience.</td>
<td>2009–2013: User sessions on Web site increase by 5% per year after introduction. (OUTPUT)</td>
<td>R Parker M Dozier</td>
<td>YES</td>
<td></td>
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<tr>
<td>Results/Narrative</td>
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</table>
Small Landowner Series conducted for clientele through county and multi-county efforts covering three or more of the following: beef cattle management, agricultural tax incentives, pasture establishment and/or management, pond establishment and/or management; wildlife management; range management; brush control; goat or sheep management; horticultural enterprises; orchard management.

2009–2013: Small Landowners attend county and multi-county series to increase knowledge of best management practices by 20% Adoption of best management practices will be 5%. (OUTCOME)

<table>
<thead>
<tr>
<th>R Parker</th>
<th>M Dozier</th>
<th>M Dozier</th>
<th>G Chandler</th>
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</table>

Results/Narrative
12 Counties conducted significant programs to address the programming needs of small acreage or new landowners. Some of the significant educational sessions were as follows:

- Brush Management Workshops
- Pond Management Workshops
- Plant Identification Clinic
- Prescribed Burn Field Day
- Wildlife Management and Tax Exemption Workshop
- Fruit and Nut Production

Results: Evaluation surveys were utilized to determine programming impacts. Some of the significant results are as follows:

- 80% of participants in Lampasas County indicated that they “probably or definitely” will utilize the knowledge gained in plant identification to better manage the overall plant ecosystems on their property.
- 70% of participants in Lampasas County indicated that they “probably or definitely” will implement recommended brush management practices to increase the overall health of their rangeland.
- Participants in Hays and Travis Counties indicated a 131.58% increase in knowledge on the laws and regulations related to prescribed burning.
- Participants in Hays and Travis Counties indicated a 67% increase in knowledge on brush management techniques and range ecosystem management.
- Participants in Guadalupe County indicated a 43% increase in knowledge on pond site selection.
- Participants in Guadalupe County indicated a 54% increase in knowledge on pond weed identification and control practices.

Conduct “Prospective Wine Grape Grower Workshops” to educate and assist potential growers in the decision process for entering this industry.

2009-2013: 55% of participants increase knowledge (OUTCOME)

<table>
<thead>
<tr>
<th>D Welsh</th>
<th>E Hellman</th>
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Results/Narrative
Prospective Wine Grape Grower Workshop
This one-day educational event is designed to provide an overview of the unique requirements and risks associated with establishment and operation of a commercial vineyard in Texas. Five Prospective Grower Workshops were held during the 2009 fiscal year in four locations: Houston (2), Fredericksburg, Pittsburg, and Lubbock. A total of 138 people attending these workshops and survey results indicated that 98% of respondents reported increase in knowledge and were mostly or completely satisfied with the activity. A high percentage (78%) of respondents reported that they anticipated benefiting economically as a direct result of what they learned from this Extension activity.

Grape Camp
Outcomes in knowledge gained by participants was collected at the 2008 Texas Wine & Grape Growers Association Grape Camp, November 2008, Fredericksburg. Extension Viticulturists made presentations on various topics. Examples of topic and percent knowledge gained indicated below:

- Soil & Water Analysis - Impact on Rootstocks (75%)
- Diagnosing Vineyard Problems (72%)
- Dealing with Salinity/Sodicity (73%)
2009 Texas Viticulture & Enology Research Symposium – Ed Hellman coordinated this inaugural event held on June 2-3 in Granbury. This first-of-its-kind conference in Texas, sponsored by Texas AgriLife Extension and Research and Texas Tech University, featured recent and ongoing research by a dozen Texas scientists. A total of nineteen research reports were presented on a diversity of viticulture and enology topics ranging from pest management, deficit irrigation strategies, and economics, to wine stability, anti-cancer effects of Texas wines, and U.S. wine consumption trends. All proceedings papers are available on the Texas Winegrape Network website at http://winegrapes.tamu.edu/research/2009symposium.html. Seventy-five people attended the two-day symposium, including individuals from Oklahoma, New Mexico, Kansas, Florida, and California. A participant satisfaction survey was completed by participants; results as follows.

Overall:
- 98% of respondents were mostly or completely satisfied with the activity.

Content:
- 96% of respondents were mostly or completely satisfied with the information being what they expected.
- 100% of respondents were mostly or completely satisfied with the information being accurate.
- 88% of respondents were mostly or completely satisfied with the information being easy to understand.
- 85% of respondents were mostly or completely satisfied with the completeness of information given on each topic.
- 92% of respondents were mostly or completely satisfied with the timeliness of information given on each topic.
- 85% of respondents were mostly or completely satisfied with the helpfulness of the information in decisions about your own situation.
- 91% of respondents were mostly or completely satisfied with the quality of course materials.
- 98% of respondents were mostly or completely satisfied with the relevance of the examples used.

Anticipated Changes & Economic Impact:
- 81% of respondents plan to take actions or make changes based on the information from this activity.
- 78% of respondents anticipate benefiting economically as a direct result of what they learned from this Extension activity.

Value of Activity:
- 98% of respondents said that the information and programs provided by Extension were quite or extremely valuable to them.
- 100% of respondents would recommend this activity to others.
- 100% of respondents would attend another subject offered by Extension if it addressed a specific need or interest of theirs.

| Conduct “Pecan Orchard Management Short Course” to increase knowledge of potential and new pecan growers regarding decisions and processes for risk mitigation and improved economic sustainability based on total management goals and optimal resource-base use. | 2009-2013: 55% of participants increase knowledge (OUTCOME) | D Welsh L Stein | YES

Results/Narrative

Pecan Orchard Management Short Course
Larry Stein and George Ray McEachern, Extension Pecan Specialist (Emeritus), coordinated the 2009 Pecan Orchard Management Short Course, a week-long school and field trip to the USDA pecan breeding station. This short course is considered the best pecan management school in the world, as evident by, the geographic diversity of the attendance: 53 individuals hailed from Australia, Peru, South Carolina, North Carolina, Kentucky, Florida, Louisiana, New Mexico, Arizona, California, and Texas. An evaluation instrument was administered with all participants reporting a knowledge gain due attendance. Further results indicate:

<table>
<thead>
<tr>
<th>Pecan Orchard Management Shortcourse Program Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in level of understanding</td>
</tr>
<tr>
<td>Understanding of pecan tree anatomy</td>
</tr>
<tr>
<td>Importance of site selection</td>
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<tr>
<td>Understanding of pecan tree physiology</td>
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<tr>
<td>Pecan history knowledge</td>
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<tr>
<td>Understanding of photosynthesis</td>
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<td>Irrigation system/scheduling/salinity knowledge</td>
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<td>Orchard design/spacing/thinning/hedging</td>
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| Conduct educational programs targeting small acreage landowners and commercial growers to increase knowledge in effectively identifying and evaluating diversification strategies using horticultural crops for risk mitigation and improved economic sustainability based on total management goals and optimal resource-base use. | 2009-2013: 55% of participants increase knowledge (intent to adopt practices and economic impact is reported also) (OUTCOME) | D Welsh  
D Wilkerson  
J Masabni | YES  
NO |

**Results/Narrative**

Charlie Hall coordinated a nursery grower webinar series (web-based seminar) entitled, “Shine in ’09-High Performance Management to Survive Turbulent Times.” This series was designed to assist nursery professionals in making better/more informed managerial decisions in the midst of an economic downturn. The three, one-hour webinars included:

- March 9, 2009 – Action Points to Survive the Downturn – Developing and fine-tuning your downturn strategies to ensure your business will survive! Dr. Charlie Hall
- April 14, 2009 – Differentiating By Being Sustainable – Being proactive by developing your own sustainability code of ethics can help set you apart from the competition! Dr. Don Wilkerson
- May 12, 2009 – Marketing Green! The "green" marketing strategies you need to thrive in a maturing marketplace! Dr. Jennifer Dennis, Purdue University

A retrospective evaluation was completed (electronically) by 148 of the 199 participants in the three webinars. Results indicated:

- 19% increase in understanding of “the value/importance of differentiating your firm from the competition to enhance profitability”
- 7% increase in understanding “how sustainability can assist in differentiating your firm from the competition to enhance profitability”
- 77% indicated they would “definitely” or “likely” adopt the practices presented in each of the webinars
- 100% indicated an expectation that adopting the practices presented would result in economic savings
- 79% indicated anticipated savings as greater than $1,000
Agriculture – Food, Fiber, and Green Industries

**Imperative 7:** Gulf fishers and aquaculture enterprise owners become more knowledgeable of technical and financial feasibility for value-added enterprises and of supply chain issues from production/harvesting to the consumer. The Texas seafood industry (fishermen, vessel owners, and processors) and aquaculture enterprise owners need to become more knowledgeable about (a) assessing the effectiveness of various technologies that either reduce input expenditures, improve ending quality, or both and (b) supply chain issues that are becoming more important to corporate and consumer interests alike.

Statement of Support: Texas shrimp boat operations are facing significant economic stress due to rising fuel costs and increasing import competition. In fact, for two years in a row, the Texas shrimp industry has qualified for Trade Adjustment Assistance funding and education due to import competition. Since 2002, Texas shrimp fishermen have been confronted with record prices — on the low end for shrimp and on the high end for fuel — that are destroying a once vibrant industry. Simultaneously, corporate and consumer interests are taking a greater interest in (a) the sustainability of wild seafood stocks and (b) the “environmental” costs of production including fuel consumption. In fact, shrimp are one of the few North American commercial fisheries stocks that are still categorized as healthy. Furthermore, the shrimp industry has an extremely high level of compliance with mandated environmental requirements to protect non-targeted species, and is addressing fuel consumption concerns with new trawl doors. However, the industry has not received much, if any, credit for their “environmental track record” by the market. Thus, future economic viability requires a simultaneous, three-pronged approach. First, applied research and outreach needs to continue that evaluates various input-reducing technologies. Second, applied research and outreach needs to continue that ensures visual quality is on par with that of high-grade imports (much of it farm-raised). Third, applied research and outreach needs to continue to find ways to maximize and promote the value and environmental track record of the Gulf and South Atlantic shrimp fishery. While some aquaculture operations are expanding, others are struggling to add value to their products in order to meet customer needs at competitive prices.

### Summary of Educational Contacts for Imperative 7

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>193</td>
<td>272</td>
<td>3,450</td>
<td>3,643</td>
</tr>
</tbody>
</table>

**Goal 1:** Educate members of the offshore shrimp industry to improve their knowledge of best management practices to improve quality, profitability, and sustainability of their operations. Through cooperative research and outreach with industry, provide educational activities for trade association executives, owners, and captains that enable them to improve output quality, profitability, and sustainability in their operations.

**Benchmark:** Workshops and one-on-one dockside meetings have directly reached over 200 shrimpers in all of the Gulf states during the past year.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
<th>Oversight</th>
<th>Comments/Notes</th>
<th>Measure Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and deliver various educational curriculum on best management practices to trade associations, industry leaders, and operators.</td>
<td>2009–2013: Program participants will increase their knowledge of best management practices to improve profitability. (OUTCOME)</td>
<td>M Waller L Respess</td>
<td>YES</td>
<td></td>
</tr>
</tbody>
</table>

**Results/Narrative**

- **Helping Industry Assess the Benefits of Eco-labeling**
  Sea Grant / AgriLife Extension faculty continue to work with the Ocean Conservancy, the Sustainable Fisheries Partnership, and Cleanfish to help establish a sustainable niche for some wild shrimp. Gary Graham, Patrick Riley (Western Seafood in Freeport), and Mike Haby assisted the Ocean Conservancy with an educational video to highlight the new fuel-conserving trawl gear in preparation for the Boston Seafood Show. All three were interviewed about the current state of the shrimp industry, the importance of reducing operating costs, and current requirements for offshore shrimp fishermen to use new environmental gear (i.e., updated, more aggressive by-catch reduction devices (BRDs) and larger turtle excluder devises (TEDs)). OC did quite a bit of videography, ultimately preparing a 3 minute clip that was shown continuously at the Boston Seafood Show in mid-March and exists on the OC website [http://www.oceanconservancy.org/site/PageServer?pagename=ftf_retailers_roundtable] and You Tube [http://www.youtube.com/watch?v=E-2V1qe7pnY].

- **Transferring new harvest technology to offshore shrimp producers and measuring the impact on fuel consumption, operating expenses, and shrimp production**
Diesel prices have moderated somewhat since their apex in July, 2008 at $4.01 per gallon, and by June, 2009 stood at $2.00. Yet, ex-vessel shrimp prices have dropped by about 40 percent since 2000, and by Summer, 2009 stood at their lowest levels in four decades. Although catch per unit of effort has sharply increased, remaining offshore shrimp fishermen who are producing record catches are eating into their liquidity due to historically low ex-vessel prices. Fuel use and therefore expense can be reduced with fuel-saving trawl gear. Extension/Sea Grant faculty continue cooperative research efforts with expert fishermen across the Gulf of Mexico and outreach education with offshore operators to help transition to the new vented, cambered trawl doors through funds provided by the Intensive Technical Assistance Program (CSREES/USDA) and the State Energy Conservation Office. Thus far, fuel savings among cooperating producers ranges from 28 percent (75th percentile) to 20 percent (25th percentile) with a median fuel savings of 24 percent. Even with reduced unit costs of diesel, producers can breakeven on the cost of the new gear after burning roughly 14,000 gallons of diesel (roughly 21 percent of annual fuel use). Although fuel prices have moderated, output prices have plummeted which is pushing even more producers to consider cost-saving measures.

Helping to Restore the Galveston Bay System Oyster Industry after Hurricane Ike

Summer, 2009 marked the completion of a major unplanned initiative that formally began October 1, 2008, three weeks after Hurricane Ike made landfall. This effort began with repeated trips to the impacted areas (San Leon in Galveston County and Smith Point in Chambers County) and the development of a mail survey requested by industry in lieu of a face-to-face data-collection process. Industry quickly committed to the survey. Damage estimates are based on 62 percent of all operators (leaseholders and/or processors and interstate distributors) and 74 percent of all leased bottom across the Galveston Bay system. In June the authors (Haby, Miget, and Falconer) completed the report entitled “Hurricane Damage Sustained by the Oyster Industry and the Oyster Reefs Across the Galveston Bay System with Recovery Recommendations” (TAMU-SG-09-201). A PowerPoint presentation was also prepared that highlighted the major elements of the report as well as a one-page synopsis of the work. In addition to the assessment of physical and economic damages caused by the storm, this report also included the contribution Texas makes to Eastern oyster supplies, the importance of leases across the Galveston Bay system, the environmental benefits thriving reefs provide to estuarine systems, and recommendations for recovery. Two meetings were held to highlight report findings and recovery recommendations for industry members. One of the recovery recommendations was to assess the opportunities for leaseholders to participate in a Group Risk Plan underwritten by USDA's Crop Insurance Systems, Inc. (CIS). Currently leaseholders have no way to protect the value of their living inventory on private leases within Galveston Bay, and Hurricane Ike caused $31 million in lost living inventory and damage to reefs built by leaseholders over many years (83 percent of total industry casualty losses). Currently the CEO of CIS and Sea Grant / Agrilife Extension faculty are in the early stages of discussing this opportunity for Galveston Bay system leaseholders, with industry meetings/discussions occurring later this year. Results of our damage assessment survey of oyster firms may be used by researchers with TTI and Agricultural Economics interested in developing a generalized model of sector and environmental effects from Hurricane Ike.

Goal 2: Aquaculture and farm raised seafood enterprise owners increase knowledge of best management practices and marketing alternatives to enhance profitability and product quality.

Benchmark: Conference held in El Campo

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
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<th>Comments/Notes</th>
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</thead>
<tbody>
<tr>
<td>Work with aquaculture producers and the Texas Aquaculture Association in developing and delivering relevant educational programming either individually or at industry meetings.</td>
<td>2009–2013: 65% of program participants will increase their knowledge of best management practices. (OUTCOME) 2010-2014: 70% of surveyed participants in individual site visits will increase knowledge and validate satisfaction with the Specialist on a Likert scale. (OUTCOME)</td>
<td>M Masser</td>
<td></td>
<td>Partially Met</td>
</tr>
</tbody>
</table>

Results/Narrative

Peter Woods served on the Program Committee Chair and Michael Masser served on the Program Committee for the TX Aquaculture Association annual conference in San Antonio in conjunction with the World Aquaculture Society meeting in March 2007. Surveys were not conducted because of the international nature of this conference. However, all participants polled orally noted the quality and educational value of the program.
Agriculture – Food, Fiber, and Green Industries

**Imperative 8**: Producers, landowners, agribusiness firms, and the organizations that represent them will become more knowledgeable regarding global forces impacting Texas and the agricultural and trade policy alternatives and consequences relative to long-term enterprise profitability and ‘safety net’ opportunities from federal and state sources.

**Statement of Support**: Large segments of Texas agriculture depend heavily on the ‘safety net’ support of government farm programs. Cotton and rice are more dependent than other commodities, but all program crops certainly benefit from current policies. Many sectors of Texas agriculture are also dependent on export markets or face significant import competition. Large shares of the wheat, sorghum, and cotton crops are exported, while a growing share of beef and poultry product is also sent to foreign markets. In addition, Texas feedlots, stocker operations, and packing plants depend upon Mexican cattle to sustain their operations. Any changes could have significant impacts; therefore, it is important for these groups to monitor agricultural and trade policy alternatives relative to their operations. Extension is uniquely positioned to provide research-based, unbiased information on policy alternatives and consequences for commodity organizations.

### Summary of Educational Contacts for Imperative 8

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
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<tr>
<td>50</td>
<td>2,122</td>
<td>3,802</td>
<td>7,192</td>
<td>9,314</td>
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</table>

**Goal 1**: Producers, commodity organizations, government policymakers, and agribusiness interests will receive cutting-edge applied research and analysis on U.S. agricultural policy issues.

**Benchmark**: In 2007, 32 representative farm updates were conducted across the United States. In addition, 20 publications were distributed through AFPC.

<table>
<thead>
<tr>
<th>Strategy</th>
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<tbody>
<tr>
<td>Extension faculty will participate with TAES faculty in the Agricultural and Food Policy Center (AFPC) to analyze policy alternatives and provide consequences that are research-based for dissemination to policy makers and agricultural interest groups.</td>
<td>2009–2013: Twenty-five representative farm updates conducted each year. A minimum of two publications will be distributed through AFPC. (OUTPUT) 2009–2013: The Texas Agricultural Forum and other trainings will be conducted and attendees knowledge of policy alternatives and consequences will increase 5% based on exit survey evaluations. (OUTPUT) 2009-2013: Meeting participants will increase knowledge 5% based on a post-evaluation survey. (OUTCOME) 2009-2013: A minimum of five reports disseminated per year. (OUTPUT)</td>
<td>J Outlaw</td>
<td>J Outlaw</td>
<td>M Waller</td>
</tr>
</tbody>
</table>

**Results/Narrative**

In 2009, there were 21 representative farm updates conducted for operations across the United States. Of the 21, there were 13 crop farm updates, 5 dairy farm updates, and 3 cattle ranch updates.

The Texas Agricultural Forum has served as a primary vehicle for stakeholder policy education in Texas for over 20 years, providing an open and public forum for discussion of policy and emerging issues in agriculture. The Texas Agricultural Forum is a stakeholder driven partnership between Texas AgriLife Extension Service and the agricultural interests in Texas including commodity and interest groups, farm organizations, and government agencies. In June 2009, the Texas Agricultural Forum was held to discuss the issues surrounding climate change and the likely effects of a carbon cap and trade policy on agriculture. Over 120 participants from across the state were involved in the event. A post-program survey evaluation found that attendees increased their knowledge of this controversial issue and its consequences by an average of 42%.

Extension faculty provided 6 presentations to agricultural policy makers and their staff in Washington D.C regarding their report on the farm level effects of EPA’s cap and trade analysis.
There was a series of 6 publications (2 briefing papers, 2 working papers, and 2 research reports) distributed through AFPC that went to producers, commodity organizations, policymakers, and agribusiness interests in 2009.

| When the new farm bill passes, an intensive educational effort will be conducted by specialists and county Extension agents. | 2007–2009: Producers attending Extension educational sessions on new farm bill increase knowledge by 10%.  *(OUTCOME)* | J Outlaw | YES | NO |

**Results/Narrative**

**Farm Bill/Acre Trainings** - Texas AgriLife Extension Service Economists worked in cooperation with Farm Service Agency (FSA) personnel to conduct joint educational meetings for producers across the state of Texas regarding new Farm Bill provisions, and the use of the web based ACRE decision software tool. These meetings and the decision software tool are important to help producers understand changing/new Farm Bill provisions, and to be able to analyze the possible economic consequences of their participation choices. During the December-August timeframe, 69 joint Texas AgriLife Extension Service/FSA meetings were conducted with over 1400 producers in attendance. Evaluation survey responses suggest that 82.9% of participants understanding of the 2008 Farm Bill increased by at least 30% as a result of the training. The web based ACRE decision aid tool has been used to generate 14370 runs comparing the difference between the DCP and ACRE choices. On average, the difference between the DCP and ACRE alternatives considered was $23,476.
Goal 2: Producers, commodity organizations, government policy makers, and agribusiness interests will receive cutting edge applied research and analysis on international trade and policy issues.

**Benchmark:** In 2007, two workshops were conducted on exporting to Cuba.

<table>
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<tr>
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</thead>
</table>
| Specialized conference will be planned and implemented on opportunities such as exporting to Cuba. | 2009–2013: Participants in specialized conferences increase knowledge of Cuba export opportunities, government regulations, and processes by 10%. (OUTCOME)  
2009: At least one specialized conference planned and conducted in 2009. (OUTPUT) | P Rosson | Assess economic impacts of U.S. food exports to Cuba on U.S. and Texas economy and ports. | YES |

**Results/Narrative**

**Exporting to Cuba Workshops** – Conducted two workshops (Houston and Uvalde) to inform about the prospects/potentials, process and regulations associated with exporting U.S. foods and agricultural products to Cuba under the Trade Sanctions Reform and Export Enhancement Act of 2000. Focused on market potential, the roles of the U.S. and Cuban governments, getting paid and logistics of moving cargo from Texas to Cuba. Port of Corpus Christi and Texas Department of Agriculture representatives participated. 100% of attendees indicated satisfaction with the workshop, 58% indicated that they anticipated making changes to their operations based on information provided and 79% anticipated economic benefits as a direct result of the workshop activity.

**CAFTA-DR Workshops in Guatemala** - Conducted two workshops in Guatemala on trade trends, CAFTA-DR provisions and export marketing for representatives of businesses and government agencies. Provided overview of recent US agricultural exports and imports, major tariff reductions and tariff-rate quotas limiting Guatemalan access to the US market and procedures, documentation, pricing and agency contacts for exporting to the United States. Results indicated the workshops were very well accepted, with return requests for 2009.

Goal 3: Commodity Associations, government policy makers and producers / agribusiness will receive Extension education and applied research on impacts of emerging trade and policy issues, and disruptions to trade.

**Benchmark:** Conducted analyses of economic impacts of invasive species on Texas agriculture. Results presented to industry leaders, producer board members of associations and US and state policy makers. Texas Vegetable Association, Texas and Southwestern Cattle Raisers, Texas Farm Bureau and Texas Citrus Mutual received results.

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Extension faculty and CNAS will develop methods to assess impacts and deliver to selected audiences.</td>
<td>2007-2009: Decision makers will receive results of Immigration reform impacts on US dairy farms and impacts of selected invasive species. (OUTPUT)</td>
<td>P Rosson</td>
<td>Assess economic impacts of losses of foreign labor on U.S. dairy farms.</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Results/Narrative**

**Immigrant Labor Loss Impacts on U.S. Dairy Farms** - Extension specialists (Rosson and Anderson) analyzed and reported results of national survey of 5,000 dairy farms regarding the use of immigrant labor and the impacts of immigrant labor losses on the U.S. economy. Almost two-thirds of labor on dairy farms was reported to be immigrant. Immigrant workers are responsible for just over 60 percent of the milk produced on those same farms. Dairy farm employee compensation tends to be higher than most other occupations when hours worked are considered, raising annual salary to $28,000. When non-wage benefits such as housing and insurance are included, annual dairy farm worker salaries rise to $31,500. A 20 percent loss of immigrant labor would reduce the U.S. dairy herd by 293,000 cows, leading to a six billion pound drop in milk production. Dairy farm sales would fall by $2.7 billion, leading to a total economic loss of $4.5 billion and the loss of nearly 27,000 jobs on dairy farms and throughout other sectors of the U.S. economy. Results have been reported to various U.S. and regional dairy cooperatives and U.S. Congress.
Agriculture – Food, Fiber, and Green Industries

**Imperative 9:** Agricultural producers, landowners, agribusiness, and county Extension agents become more knowledgeable of best practices to prevent, detect, and respond to potential biosecurity issues, whether naturally occurring or through bioterrorist action.

**Statement of Support:** The advent of the 21st century has brought unparalleled concern over the safety of our food and fiber system from natural or bioterrorist introduction of detrimental pathogens. All of agriculture needs to be vigilant. The fact that Texas shares a border with Mexico and has multiple water ports from Beaumont to Brownsville certainly is cause for concern. Early detection and response are critical to saving millions of dollars in economic loss and potential loss of life. This goal responds to an issue identified in the Beef Roundtable and Extension Data Summits.

**Summary of Educational Contacts for Imperative 9**

<table>
<thead>
<tr>
<th>Educational Sessions</th>
<th>Group Contacts</th>
<th>Contact Hours</th>
<th>Other Direct Contacts</th>
<th>Total Direct Contacts</th>
</tr>
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<tbody>
<tr>
<td>4</td>
<td>103</td>
<td>208</td>
<td>258</td>
<td>361</td>
</tr>
</tbody>
</table>

**Goal 1:** Livestock and poultry producers, agribusiness owners, and organization leaders will adopt best management practices associated with identifying foreign and emerging animal diseases and developing appropriate resource plans.

**Benchmark:** In 2008, beef, poultry, equine, and dairy specialists provided biosecurity education through various programs and workshops. Knowledge changes were noted for topics related to enhanced preparedness, carcass disposal and health issues.

<table>
<thead>
<tr>
<th>Strategy</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Develop educational programs that teach livestock and poultry producers biosecurity awareness, epidemiology, common animal diseases, and media communication strategies.</td>
<td>2007-2009: Best Management practices for bio-security developed and in place for major livestock species to supplement routine educational programs conducted across the state. (OUTPUT) 2009–2013: Online newsletter series implemented and maintained that provides awareness of materials associated with market protection from foreign and emerging animal diseases. (OUTPUT) 2009-2013: Awareness information fact sheets on foreign and emerging animal diseases to supplement routine educational programs across the state. (OUTPUT)</td>
<td>M Farnell R Gill B Faries</td>
<td>B Faries</td>
<td>YES NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

*Foreign and Emerging Animal Diseases (FEAD) and Emergency Management Extension Program in Extension Veterinary Medicine*

**Impact:** Enhanced preparedness of livestock and poultry producers and veterinarians in early detection and rapid reporting to reduce outbreaks and devastations of potential threats of FEADs and bioterrorism.

**Progress:** Faculty effort is devoted to Extension education program development and implementation in FEADs and EM in support of Texas State FEAD Response Plan (Appendix 3 of Annex O of Texas State Emergency Management Plan).

Education of the animal industry and veterinary profession to produce sufficient first defenders is key to enhance early detection and rapid reporting for prevention of animal and human health disasters:

**Presentations, publications and consultations in biosecurity measures continue at national, state and local levels to produce first defenders.**

**Online interactive course ([http://agrilifeevents.tamu.edu](http://agrilifeevents.tamu.edu))**:

Texas FEAD Train-the-Trainers Curriculum for Educators) through auto-tutorial, web-based delivery system with support of AIT for electronic delivery for state-wide continuing education and new employee training for veterinarians and Extension faculty with certificates of completion and CEUs credit.
Future Program Development:

Develop online interactive course: National FAZD Train-the-Trainers Curriculum for Educators (FAZD Center Grant – $20,000 pre-approval for FY 10) (Funds will be available October 1, 2009.)

Bio-Security Education – Animal Science has produced 5 specie publications that went to print in late August. Also, in support of Tom Hairgrove’s DHS Veterinary Workshop, Drs. Kerri Harris and Jason Cleere presented 35 veterinarians with information on pre-harvest food safety and beef cattle bio-security practices. From one Regional BQA program, producers reported:
50 % knowledge gain in Bio-Security, with
38% reporting probable/definite adoption of bio-security practices.
From the Horse Feed Manufacturer’s Workshop:
35 % gain in knowledge in bio-security practices regarding movement from farm to farm.

Dairy Environmental Issues – From Sept. to Nov., 2008 major dairy efforts were directed to environmental issues impacting the dairy industry. Producers received 865 hours of CEU’s towards their educational requirements to maintain compliance on their TCEQ permits at programs in East and Central Texas. Jordan and Bilby assisted with the planning of the programs and conducted portions of the trainings. The program in East Texas was evaluated with the following outcome: Of the attendees 58% plan to make changes based on the information provided, 91% said information was relevant and applicable to their situation, 50% said they would benefit economically from implementation and 78% said they would recommend this activity to others. In addition, a Feed Management Workshop, regarding the Natural Resources Conservation Service Practice Standard for Feed Management (Code 592), was held at the Amarillo Center with 41 total attendees from both the dairy and beef industries. This was a joint program of Texas AgriLife Extension Service, Plains Nutrition Council, Texas Animal Nutrition Council and the Plains Chapter of the American Registry of Professional Animal Scientists coordinated by Jordan and McCollum. Jordan assisted USDA-ARS in identifying priority research areas for the national Agricultural Research Service program for the next five years of research regarding Agricultural Waste and By-product Utilization. The Environmental Records Calendar produced in cooperation with the Texas Association of Dairymen was changed based on producer input, 800 copies printed, and distributed to each dairy producer in Texas. Bilby participated in the Leon Watershed Protection program and both specialists were involved in multi-agency discussions regarding the Bosque Watershed. Finally dialogue was initiated with TCEQ and EPA regarding compliance issues facing the dairy industry, particularly in East Texas.

Fever Tick Working Group – Cattle fever has caused enormous losses to the U.S. cattle industry in the past. Continued efforts to control the spread of the tick that carries the disease continues to cost local ranchers, state and federal agencies, and therefore taxpayers, million of dollars annually. Species of fever tick continue to be taken from cattle & wildlife (white tailed deer and nilgai) outside the quarantine zone, meaning an additional 1116 square miles in 5 South Texas counties have been added to a temporary quarantine zone. Some 1 million head of Mexican feeder cattle are imported annually and although all of these are fever tick free, it is unknown if any of them carry the fever organism. The TAHC formed the Fever Tick Working Group in 2007, comprised of cattle producers, hunting ranches, veterinarians, researchers, Extension faculty, university representatives, state and federal wildlife and animal health personnel. The group continues to review the fever tick program, determine strengths and weaknesses, look at limited treatment options and explore other potential mitigation steps. The charge to the committee is to evaluate and make recommendations to the TAHC and the USDA regarding prevention measures to avoid reintroduction, identification of existing infestations, reduction in spread and elimination of infestations in south Texas. Extension faculty continue to participate in the efforts to educate producers inside and outside the quarantine zone in efforts to further contain the spread of the vector that has the potential to spread the disease. Programs focus on indentifying biosecurity risks to ranchers within the zone and to those that might purchase livestock coming from or through the quarantine zone.
**Goal 2:** County Extension agents and veterinarians will be trained to and/or supported with resources related to foreign and emerging animal diseases and special incidents (IRTs) affecting the livestock industry.

**Benchmark:** In 2007, eight incident resource teams were developed and 14 ANSC specialists served on IRT’s.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure(s)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Develop educational programs and/or resource materials that teach county Extension agents and veterinarians and support the livestock owner / producer</td>
<td>2009: Verification protocol completed for trained individuals. (OUTPUT)</td>
<td>B Faries</td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>2009 – 2013: Resource materials developed for each IRT and for individual livestock species as appropriate. (OUTPUT)</td>
<td>A Vestal, B Faries, R Gill</td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>

**Results/Narrative**

* Monitor and evaluate online interactive course training on FEADs and EM (Texas FEAD Train-the-Trainers Curriculum for Educators).

*Extension animal science, poultry science and veterinary medicine on Incident Resource Teams have provided leadership to development and update Biosecurity Best Management Practices for 5 livestock and poultry species for use by producers, livestock markets, and fairs and expositions across the state. These materials are available via TexasEDEN.tamu.edu. Issues surrounding H1N1 Flu in 2009 called for an elevated level of public outreach on swine human interaction and swine producer biosecurity outreach. AgriLife Extension Swine, animal science and veterinary medicine specialists contributed to two series of teleconference coordination calls with the National Pork Board, Texas Pork Producers Association, Texas Animal Health Commission and Texas Department of Agriculture resulting in a Joint Information Center for fall 2009 H1N1 animal issues media message coordination.

**Drought Mitigation** – While Texas recovers to some extent from dry conditions, changes in fertilizer costs and re-establishment of forage production land has driven hay costs higher. Compared to three years ago, baled hay costs have increased by as much as 75%. Livestock owners benefit from improved confidence in problem solving, decision making and hay selection. From horse educational programs, 95% of participants report increased ability to solve problems, 88% report increased ability to make specific decisions about alternative roughages, and 76% indicate ability to select suitable hay has increased as a result of targeted education.

**Hurricane Response** – Extension Specialist Jason Cleere and Jason Banta responded to the needs of the Texas ranches impacted by hurricane Ike in direct relief efforts delivering supplies and labor to prevent the starvation of livestock displaced by the hurricane. In addition these specialist assisted in follow up meetings to initiate recovery efforts for forage and livestock production after cleanup efforts are complete.

**Drought Response** – Animal science specialist have completed the updating of and collection of 47 publications related to management of livestock during drought. Updated materials are available on EDEN and in the Texas Drought Management Handbook.

**Beef, Pasture and Range Short Course**

Cost of production across all sectors of the livestock industry is two to as high as three times as high as in the previous production year. Profitability in ranching operations is dependent upon managing and lowering cost of production. In conjunction with higher input costs prices paid for commodities raised and produced on livestock operation have decreased by 25 to 30%.

Educational programs were conducted through the Beef, Pasture and Range Short Course which was conducted in 11 locations attracting in excess of 1200 producers from across 27 counties.

Attendees at the educational programs reported a 45.6% increase in knowledge and an informational value of $78.76 per cow.