

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

National Conference on Feral Hogs

Wildlife Damage Management, Internet Center
for

5-2008

Statewide Feral Hog Abatement Pilot Project, 2006-2007

Billy Higginbotham

Texas A&M Extension Wildlife and Fisheries, b-higginbotham@tamu.edu

Greg Clary

Larry Hysmith

Michael J. Bodenchuk

USDA APHIS Wildlife Services, michael.j.bodenchuk@usda.gov

Follow this and additional works at: <https://digitalcommons.unl.edu/feralhog>



Part of the [Environmental Health and Protection Commons](#)

Higginbotham, Billy; Clary, Greg; Hysmith, Larry; and Bodenchuk, Michael J., "Statewide Feral Hog Abatement Pilot Project, 2006-2007" (2008). *National Conference on Feral Hogs*. 9.
<https://digitalcommons.unl.edu/feralhog/9>

This Article is brought to you for free and open access by the Wildlife Damage Management, Internet Center for at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in National Conference on Feral Hogs by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Final Report

**STATEWIDE FERAL HOG ABATEMENT
PILOT PROJECT, 2006-2007**

**Submitted to:
Texas Department of Agriculture**



Texas AgriLife Extension Service

May 2008

FAST FACTS

Direct Control – (Texas AgriLife Extension Service - Wildlife Services)

Directly assisting agricultural producers with abatement of feral hog damage by utilizing individual or multiple integrated control strategies (i.e. trucks and people on the ground and helicopters in the air).

Scope: 48 cooperators with 223,017 acres owned/leased

Hogs Removed: 3,799 (Aerial-36%, trap-33%, firearm-26% snare 5%)

Customer Satisfaction: 9.1 (0 to 10 scale)

Net Promoter Score: 71%

Direct Control Economic Impact: \$1,480,491

Benefit : Cost Ratio = \$6.20 to \$1.00

Indirect Control/Education/Technical Assistance - (Texas AgriLife Extension Service-County Extension Agents/Wildlife Specialists/Wildlife Services Troubleshooters and Technicians)

Indirect Control - Providing agricultural producers and other landowners (i.e. those managing natural resources) with the tools necessary to facilitate feral hog abatement through legal control methods. This includes providing life history and behavior information as it relates to the use of control options and procedures.

Education - Websites and written information on research-based control options and methodology to support landowner's efficient abatement of feral hog damage.

Technical Assistance – One-on-one contacts with landowners to advise on control methodologies with response provided by Wildlife Services Troubleshooters and Technicians.

Scope: 66 counties conducting indirect control/education

Number of educational events: 67

Total clientele attending: 5,197

Increased Knowledge: 68%

Number of New Management Practices to be Adopted: 3.2 per participant

Website Statistics: 31,374 unique hits and 76,830 pages accessed

Media Contacts: 31 (tv interviews-9, news releases-2, newspaper and radio interviews-20)

Customer Satisfaction: 8.7 (0 to 10 scale)

Net Promoter Score: 51%

Indirect Control/Education Economic Impact: \$2,978,821

Benefit : Cost Ratio = \$19.60 to \$1.00

Project Summary

Total Economic Benefit as a Direct Result of Project: \$4,459,312

Benefit : Cost Ratio = \$11.42 to \$1.00

Table of Contents

Abstract.....	1
Background.....	2
Introduction.....	3
Methodology.....	3
Results.....	4
Direct Control	4
Indirect Control.....	14
Summary	20
Appendix 1 Project Personnel.....	22
Appendix 2 Cooperator Survey Forms	23
Appendix 3 Landowner/Program Participant Testimonials.....	33
Appendix 4a Educational/Awareness Program Participant Survey.....	38
Appendix 4b Educational/Awareness Program Participant Survey.....	39
Appendix 5 Net Promoter Score.....	40
Appendix 6 Examples of Educational Program Agendas	41

FINAL REPORT

STATEWIDE FERAL HOG ABATEMENT PILOT PROJECT TDA GRANT # FHA06-01

Billy Higginbotham-Principle Investigator, Professor/Extension Wildlife and Fisheries Specialist
Greg Clary- Cooperating Investigator, Professor and Extension Economist
Larry Hysmith- Project Manager and Extension Program Specialist – Wildlife and Fisheries
Michael Bodenchuk-Cooperating Investigator and Director, Wildlife Services

ABSTRACT

The two year Feral Hog Abatement Project was implemented in January 2006. On-site technical assistance (direct control) was provided to landowners at three pilot sites (Post Oak Savannah/Pineywoods, Blacklands Prairie and Coastal Prairie) while group educational events (indirect control) emphasizing adoption of efficient landowner-initiated control methods were conducted statewide. Both groups of clientele participating in the project and were surveyed to measure the overall economic impact of this Texas Department of Agriculture-funded initiative. Data spanned the period 2005-2007 so as to estimate the economic impact of technical assistance and educational programs to the agricultural community.

Wildlife Service technicians worked with a total of 48 cooperators during the course of this project. However, eight participants did not provide data for a variety of reasons for all three years concerned. Data from all cooperators are included in the main body of this report as results from these eight participants do not significantly impact totals.

The 48 participating cooperators owned or controlled 230,017 acres and estimated damages and expenditures totaling \$2,228,076 directly attributable to feral hogs at the three pilot sites for 2005. These same cooperators estimated a decline in damage to \$1,261,520 in 2006 as a direct result of Wildlife Service abatement efforts that included the removal of 1,930 feral hogs. In 2007, a decline in damage of \$513,935 from the previous year (2006) was noted following the removal of 1,869 hogs. As a result, cooperators saved a total of \$966,556 through the direct technical assistance provided by Wildlife Services during Year 1 and \$513,935 in Year 2 of the project for a total savings of \$1,480,491. On a scale of 0 to 10, cooperators participating in technical assistance efforts via Wildlife Services rated the services provided as a 9.1 based on the likelihood of their recommending Wildlife Services to friends, family and colleagues as a source of technical assistance for feral hog control. A Net Promoter Score of 71% among the cooperator group also indicated that Wildlife Services was efficiently assisting landowners with direct control via on-site technical assistance. The benefit to cost ratio of direct control efforts was 6.2 to 1.0 (\$6.20 saved for each \$1.00 invested).

Texas AgriLife Extension Service (formerly Texas Cooperative Extension) educational/outreach efforts/technical assistance (indirect control) were conducted statewide for 5,197 landowners attending 67 educational events in 66 counties and by one-on-one contacts. Educational program efforts included seminars, workshops, field days and pesticide recertification trainings. Participants were surveyed to determine damage type, control methods employed, number and type of practices to

be adopted, knowledge gained and economic value of knowledge gained. A total of 2,281 participants (return rate = 44%) completed surveys. While this rate of survey return was considered to be high, it was actually higher than reported because multiple program participants often represented a single landholding, thus only one survey was completed per landholding/family in attendance at an educational event. Indirect control programming resulting in knowledge gained were valued at \$2,978,821 by landowners, based on previous year's damage estimates (\$6,252,044) vs. the upcoming year's damage estimates (\$3,273,223). This equates to an average information value/economic savings of \$2,108 per each of the 1,413 survey respondents answering the economic impact questions. The benefit to cost ratio of indirect control efforts was 19.6 to 1.0 (\$19.60 saved for each \$1.00 invested). On a scale of 0 to 10, landowners participating in educational events scored AgriLife Extension with a Customer Satisfaction Rating of 8.7 (on a 0 to 10 Likert scale) based on the likelihood of their recommending our agency as an information source and for feral hog control to their family, colleagues and friends. A Net Promoter Score of 51% among the landowner group also indicated that AgriLife Extension was efficiently reaching the needs of clientele with educational/outreach information on abating feral hog damage. The feral hog website (<http://feralhog.tamu.edu>) was a popular source of information on feral hogs, their control and the project's progress with 31,374 unique hits and 76,830 pages accessed. Tremendous media interest in the project resulted in 9 television interviews, 2 news releases and 20 radio and newspaper interviews.

In total, the Feral Hog Abatement Pilot Project has saved landowners/agricultural producers \$4,459,312 during resulting in benefit to cost ratio of 11.42 to 1.00 (\$11.42 saved for each \$1.00 invested).

BACKGROUND

The Texas AgriLife Extension Service (formerly Texas Cooperative Extension) provides quality, relevant outreach and continuing education programs and services to the people of Texas. These outreach and educational programs, relative to the feral hog abatement project, were delivered to the public by county Extension agents at the county, multi-county, regional and state levels with the support of Extension Specialists within the Extension Wildlife and Fisheries Project Group/Department of Wildlife and Fisheries Sciences-TAMUS. Direct control services relative to this project were provided by Wildlife Services, a unit within Texas AgriLife Extension Service that serves urban and rural areas with technical assistance, education and direct control in wildlife damage management in order to alleviate negative impacts of wildlife (See Appendix 1 for a listing of project personnel). The Texas AgriLife Extension Service is the only state agency uniquely positioned to address both the educational/outreach (indirect control) and technical assistance aspects (direct control) of this project focusing on feral hogs and their damage to Texas agriculture.

In 2005, the Texas Department of Agriculture issued a request for proposals for projects that could address feral hog damage abatement issues in Texas. AgriLife Extension was successful in obtaining funds to conduct a pilot project that encompassed both education of and direct assistance/service to landowners negatively impacted by feral hogs. The project was initiated in January 2006 and continued for a two year period through December 2007.

INTRODUCTION

Hogs were first introduced to the New World in Florida in 1539 and later into Texas by the mid-1500's. This, along with free-ranging hog production practices and purposeful introductions of hogs, has contributed to the present status of feral hogs in the state. Today, the feral hog is considered to be an exotic species with populations estimated at 2 million head in Texas and 4 to 5 million head nationwide. Populations occur in approximately 85% of Texas counties, in 38 other states and in 4 Canadian provinces. A team led by Dr. Clark Adams (Department of Wildlife and Fisheries Sciences-TAMU) surveyed 775 Texas landowners in 2003-04 regarding their attitudes toward and economic impact of feral hogs. The study determined that the vast majority of Texas landowners viewed feral hogs as both economic and environmental liabilities.

Average economic loss per survey respondent was \$7,515 since hogs first appeared on their properties. An additional average expenditure of \$2,631 was required to correct damage and/or institute control efforts. Extrapolation of these data revealed that a conservative estimate of feral hog damage to Texas agriculture is \$52 million annually, with additional annual expenditures of \$7 million for repairing damage and/or controlling hogs. These economic impacts do not include damages occurring to urban/suburban landscapes and personal property/injuries due to disease transmission and/or vehicle/hog collisions. As feral hog populations continue to increase in Texas and other states, these economic impacts are expected to also continue to increase. Currently, the best course of action is to adopt integrated control strategies (direct control) in association with landowner education efforts (indirect control) to manage feral hog populations and the damage they cause.

METHODOLOGY

Three sites composed the pilot project for on-site direct control: Post Oak Savannah/Pineywoods, Blacklands Prairie and Coastal Prairie. These sites were selected because they were very different ecoregions within the state representing a variety of agricultural enterprises, soil types, and climates. Within each ecoregion, specific counties were chosen based on the agricultural enterprises represented and the willingness of county Extension personnel and Wildlife Services personnel to coordinate and cooperate on this project. These included Hill, Navarro and a portion of Henderson County representing the Blacklands site, Camp County representing the Post Oak Savannah/Pineywoods site and Matagorda County representing the Coastal Prairie site.

Cooperator/landowner listening sessions were held at each pilot site at the beginning of the study in order to characterize agricultural damage caused by feral hogs and facilitate a tailored survey design. Cells of cooperators were identified and enrolled in the project by Wildlife Services personnel. All cooperators were required to provide detailed damage and economic impact information for pre- and post- abatement activities for each year of participation during one-on-one interviews (Appendix 2). Cooperators consisted of landowners that participated in: 1) both years (2006 and 2007) of the study or 2) only one year (2006 or 2007) of the study. Customer Satisfaction, Net Promoter Score and testimonial data were also collected during the survey process. Cooperators in these three identified pilot sites (Figure 1) received direct control from Wildlife Services personnel using all legal means practical and necessary to abate feral hog damage on their properties.

A second clientele group reached during the project was landowners participating in indirect control efforts. Indirect control included educational/outreach efforts conducted via seminars, field days, workshops and pesticide applicator recertification trainings. In addition, Wildlife Services troubleshooters and technicians provided limited one-on-one technical assistance to landowners upon request. Unlike Wildlife Services cooperators, these landowners did not receive direct one-on-one onsite direct control assistance but rather were participants in educational events conducted across the state and sponsored by county Extension agents throughout the two year project. All program participants were asked to complete a one page survey form at the conclusion of each educational event to characterize damage caused by feral hogs, identify current control methods employed, determine the economic value of information provided to them (i.e. reduced damage, increased yields) and calculate a Customer Satisfaction Rating and a Net Promoter Score (Appendices 4a and 5). The survey instrument was modified in September 2007 to facilitate the collection of additional information on the 1) type and number of management practices to be adopted, 2) knowledge gained and 3) income generated from sales of feral hogs and/or leasing of hunting rights (Appendix 4b).

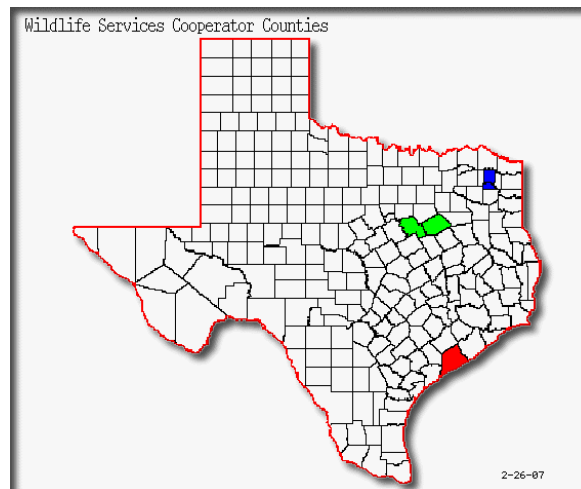


Figure 1. The three cooperator pilot sites of the Feral Hog Abatement Project are the Coastal Prairie (red), Blacklands (green) and Post Oak Savannah/Pineywoods (blue).

RESULTS

PROJECT PILOT SITE COOPERATOR ACTIVITIES-BY SITE (DIRECT CONTROL)

Post Oak Savannah/Pineywoods

Cooperators owning or controlling 19,994 acres participated in direct control via Wildlife Services at the POS/PW Site. The 2005 cooperator total damage estimate of \$1,495,910 declined 51% to \$734,020 in 2006 for a savings to cooperators of \$761,890 (Figure 2). The 2006 cooperator total damage estimate declined another 40% to \$436,835 for an additional savings of \$297,185. A total of 615 hogs were removed during 2006 and 502 were removed in 2007 for a total of 1,117 over two years

of direct control. The majority of hogs taken at this site over two years were by trapping (574 or 51%) and use of firearms (321 or 29%) (Figure 3).

Because of tree canopy cover and vegetation density characteristic of the Post Oak Savannah and Pineywoods Ecological Regions, aerial shooting via helicopter was not a viable control option.

Cooperators rated Wildlife Services (on a scale of 0 to 10) a 9.6 as to their likelihood to recommend them as a source of technical assistance to family and friends. A Net Promoter Score of 87% is further indication of cooperators' confidence and satisfaction with WS technical assistance at this site.

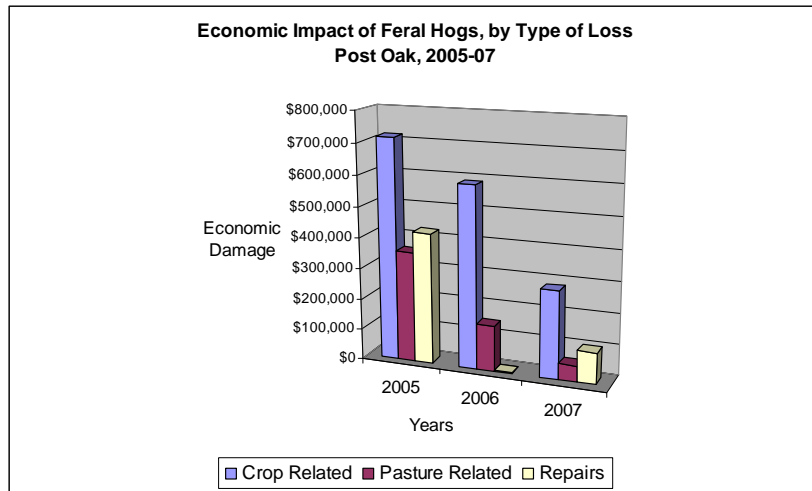


Figure 2. Cooperators' economic impact by damage type in the Post Oak Savannah/Pineywoods pilot site.

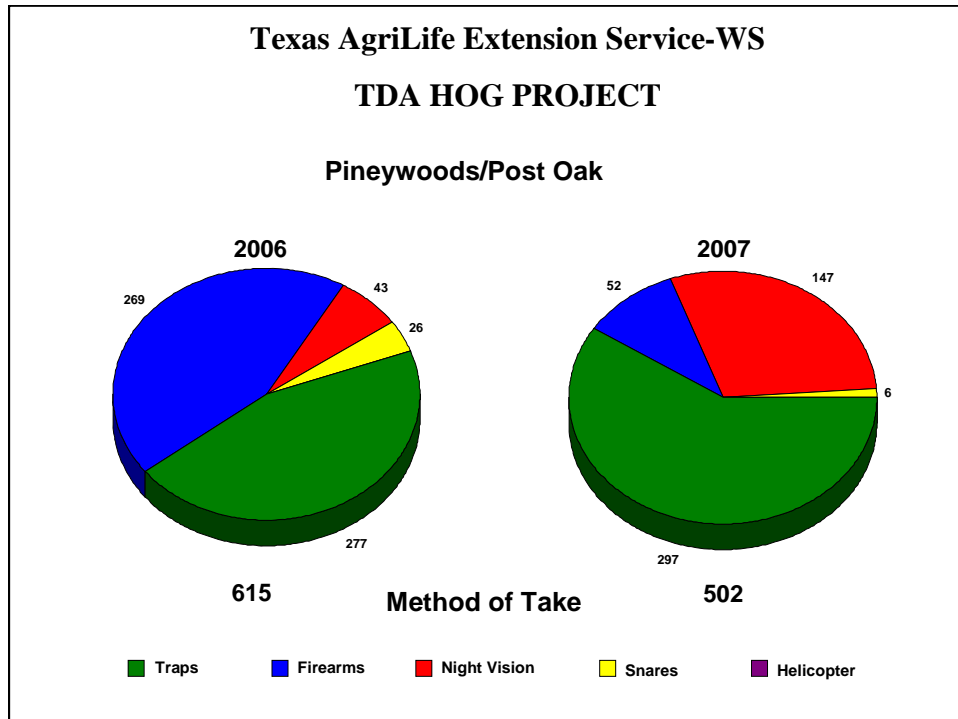


Figure 3. Number of hogs removed from the Pineywoods/Post Oak site by year and method.

Blacklands

Cooperators owning or controlling 56,040 acres participated in direct control via Wildlife Services at the Blacklands Site. The 2005 cooperator total damage estimate of \$254,505 declined 45% to \$139,170 in 2006 for a savings of \$115,335 (Figure 4). The 2006 cooperator total damage estimate declined another 48% to \$71,820 for an additional savings of \$67,350. A total of 684 hogs were removed during 2006 and 544 in 2007 for a total of 1,228 over two years of direct control assistance. The majority of hogs were removed by trapping (660 or 54%) and shooting (236 or 26%). (Figure 5). Aerial shooting via helicopter accounted for 119 feral hogs (10%) at the Blacklands Site, but this method was employed only in 2007.

Cooperators rated Wildlife Services (on a scale of 0 to 10) an 8.6 as to their likelihood to recommend them as a source of technical assistance to family and friends. A Net Promoter Score of 56% is an indication of cooperators' confidence and overall satisfaction, although it was considerably less than the value assigned by cooperators in the POS/PW site.

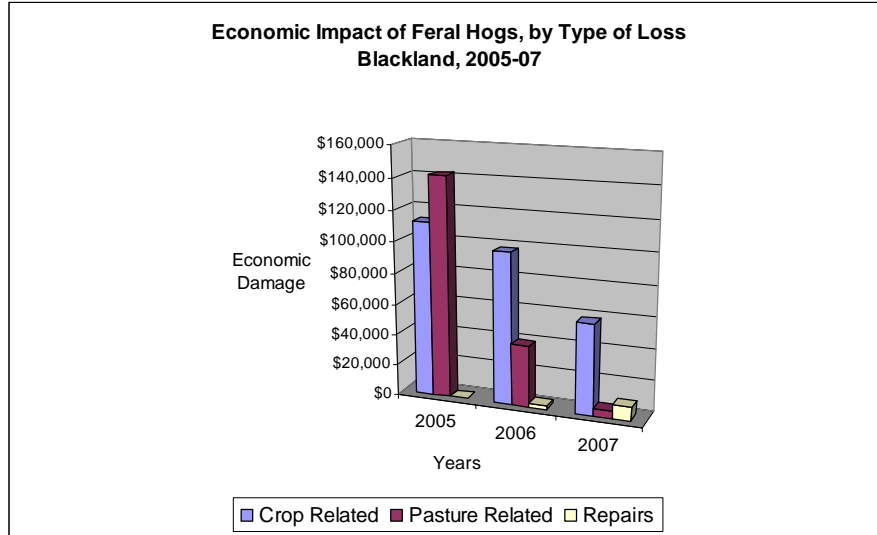


Figure 4. Cooperators' economic impacts by damage type in the Blacklands pilot site.

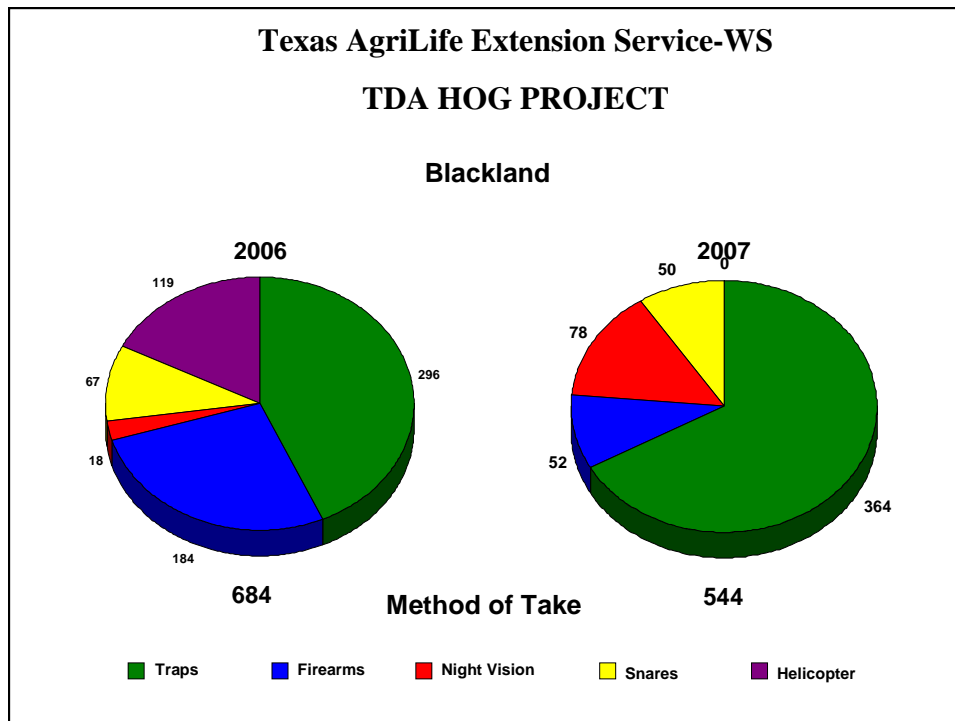


Figure 5. Number of hogs removed from the Blacklands Site by year and method.

Coastal Prairie

Cooperators owning or controlling 146,983 acres participated in direct control via Wildlife Services at the Coastal Prairie Site. The 2005 cooperator total damage estimate of \$477,661 declined

19% to \$388,330 in 2006 for a savings of \$89,331 (Figure 6). The impact of control efforts from 2005 to 2006 is not as great as in the other two regions, primarily due to the successful control efforts conducted by WS on cooperators' properties in 2005, the year just prior to the initiation of the Abatement Study. The 2006 cooperator total damage estimate declined another 38% to \$238,930 for an additional savings of \$149,400. During 2005, 897 hogs were removed from cooperator's properties via aerial shooting before the actual pilot study began, which makes the Coastal Prairie location unique among the three pilot sites. For this reason, the observed program savings in the Coastal Prairie site is a very conservative estimate of damage averted by control.

In 2006, 631 hogs were removed and in 2007 another 823 were removed for a total of 1,454 over two years of direct control assistance. The majority of hogs removed during 2006-07 were via aerial shooting via helicopter (1,245 or 86%) (Figure 7). Aerial shooting was the most effective control method employed at this site because the more open terrain and lack of tree canopy cover were more conducive for helicopter flights (Figure 8). Hog removal per hour of flying time was highest in 2005 (25.0 hogs/hour) before decreasing in 2006 and 2007 (16.3 and 21.3 hogs/hour, respectively).

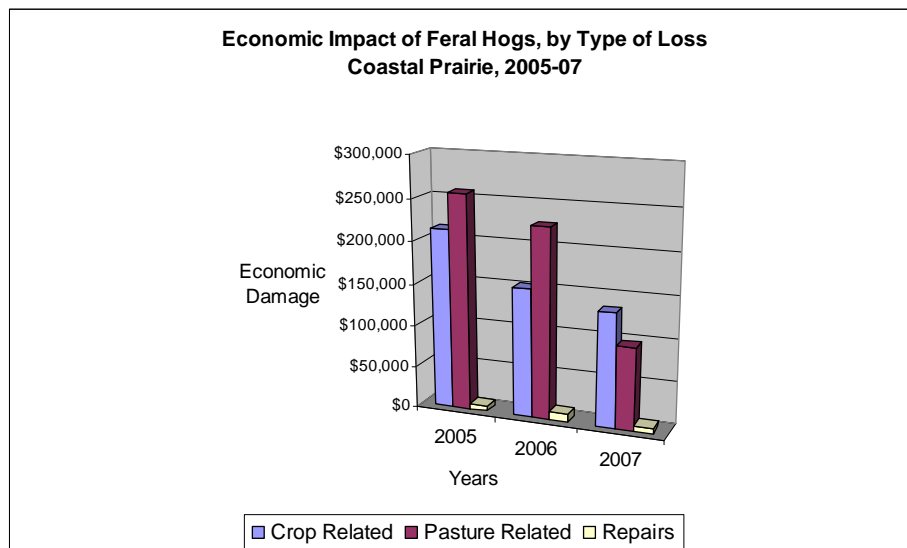


Figure 6. Cooperators' economic impacts by damage type in the Coastal Prairie pilot site.

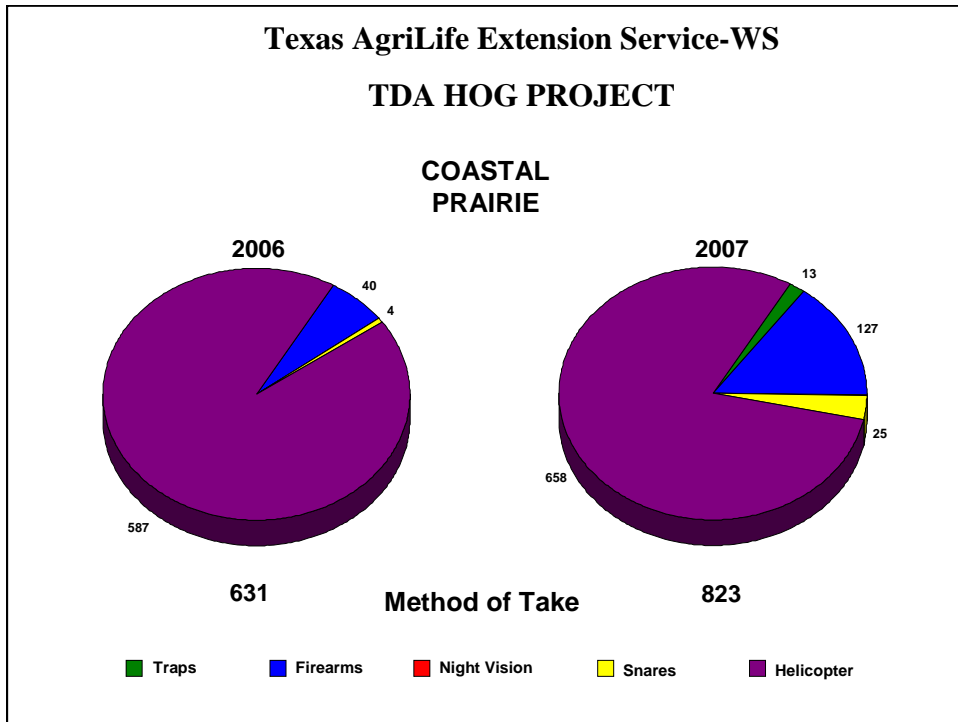


Figure 7. Number of hogs removed from the Coastal Prairie Site by year and method.

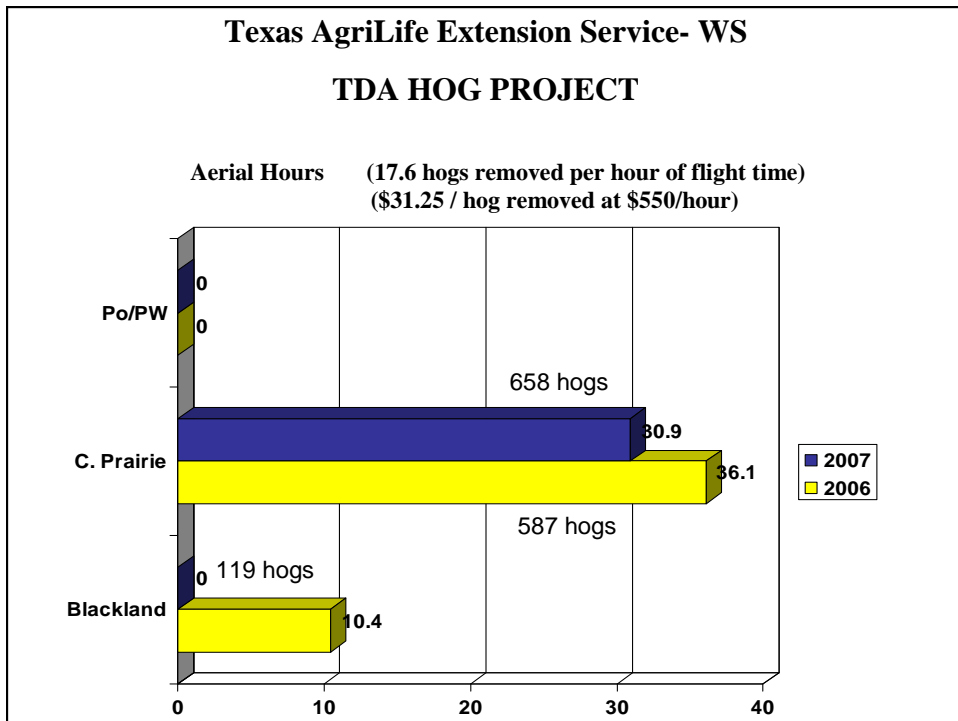


Figure 8. Hogs removed by aerial shooting by site.

Cooperators rated Wildlife Services (on a scale of 0 to 10) a 9.2 as to their likelihood of recommending them as a source of direct control assistance to family and friends. A Net Promoter Score of 78% is further indication of cooperators' confidence and satisfaction with WS technical assistance at this site.

PROJECT PILOT SITE COOPERATOR ACTIVITIES-SUMMARY OF ALL PILOT SITES

Each cooperator was surveyed to characterize damage type and assign economic impact of feral hogs before the abatement efforts were initiated on their property (Figure 9). Baseline data were collected on customized pilot site survey forms via one-on-one interviews with each cooperator prior to any direct control efforts (Appendix 2). Following each year of direct control effort, economic impact data were collected via the same style of survey instrument used to collect baseline (pre-control) data. Most cooperators (40) participated in both years (2006 and 2007) of the project. However, 8 cooperators participated in only one year of the pilot project (i.e. dropped out after 2006 or participated only in 2007).

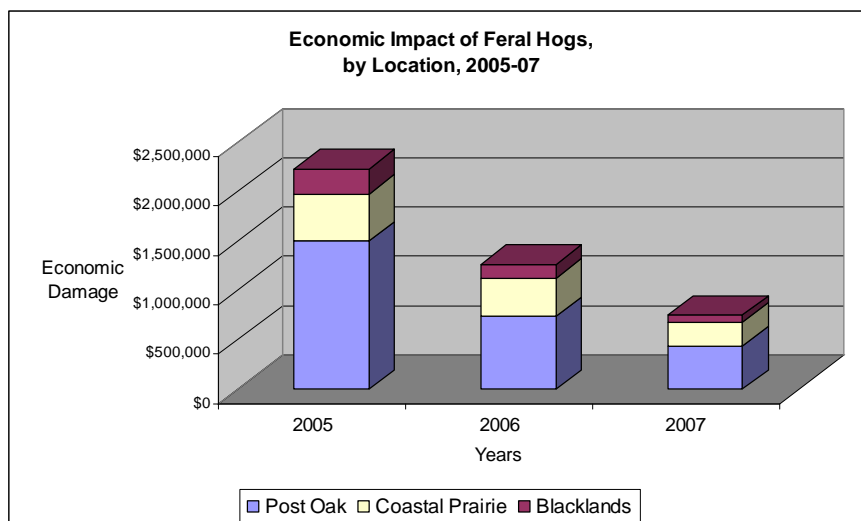


Figure 9. Economic impact on cooperator properties, by location.

The economic impact surveys following direct control efforts were completed and collected through cooperating landowner meetings within each project site in January 2007 and again in January 2008 (Figure 10). During these meetings, discussions were held with the cooperators covering the progress of the project, their views as to the success of the project and their opinions on the use of future abatement funding if available. These meetings were valuable for collecting data but also for obtaining anecdotal feedback from the cooperators. Testimonials were collected from the one-on-one interviews and surveys and are summarized in Appendix 3.

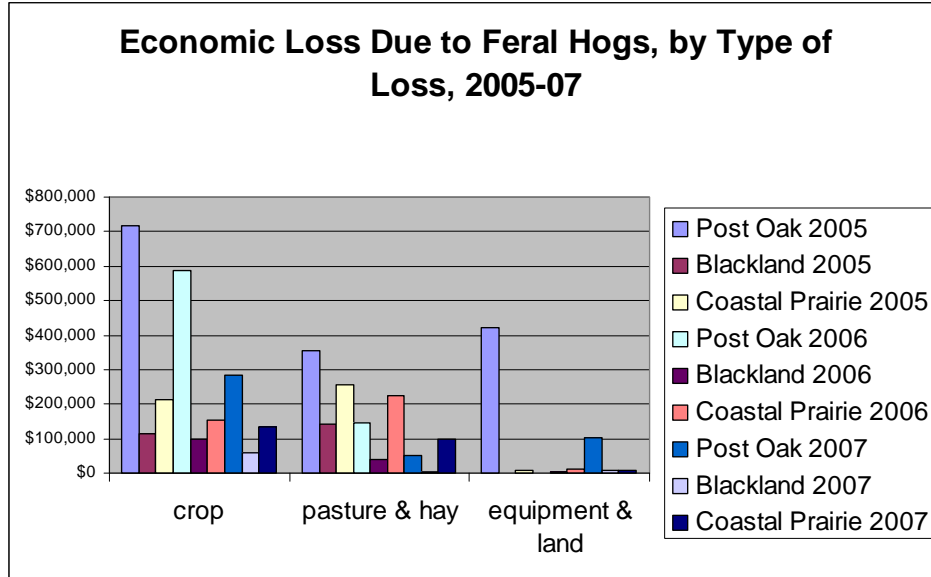


Figure 10. Economic impact of feral hogs on cooperator properties by damage type.

These survey data were collected, analyzed and compiled by project site and then totaled for a statewide summary. A total of 48 cooperators (representing 230,017 acres) have been involved at the three pilot sites throughout the project (Figure 11).

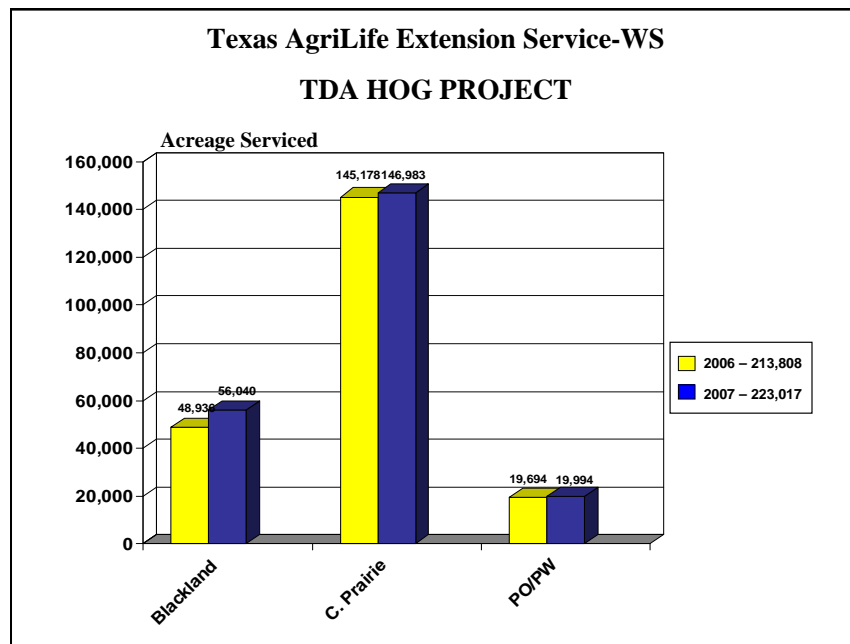


Figure 11. Cooperator acreage by site and year.

Hog removal by site was Post Oak Savannah/Pineywoods (1,117), Blacklands (1,228) and Coastal Prairie (1,454) for a total of 3,799 (Figures 12, 13 and 14). At all three sites combined, the

cooperators experienced a total decrease in economic losses due to feral hog damage of \$1,480,491 from 2005 (\$2,228,076) to 2007 (\$747,585). Individually, the economic differences within the sites equated to a 71% decrease (\$1,495,910) in the Post Oak Savannah/Pineywoods Site, a 72% decrease (\$254,505 vs \$71,820) in the Blacklands Prairie Site, and a 50% decrease (\$477,661 vs \$238,930) in the Coastal Prairie Site (the removal of 897 hogs from the Coastal Prairie Site in 2005 before the project began was responsible for the reduced economic impact of 2006 control efforts). The total decrease in economic damage for all three pilot sites combined was 66%.

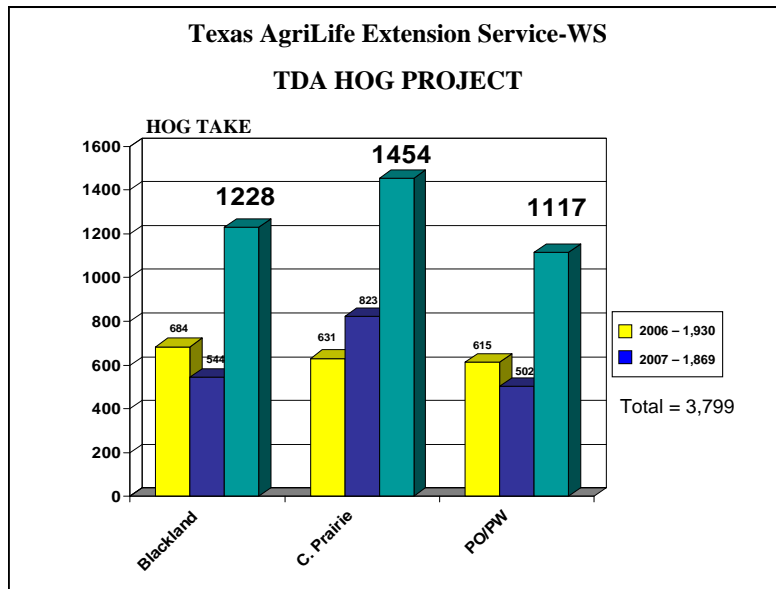


Figure 12. Number of hogs removed by site and year.

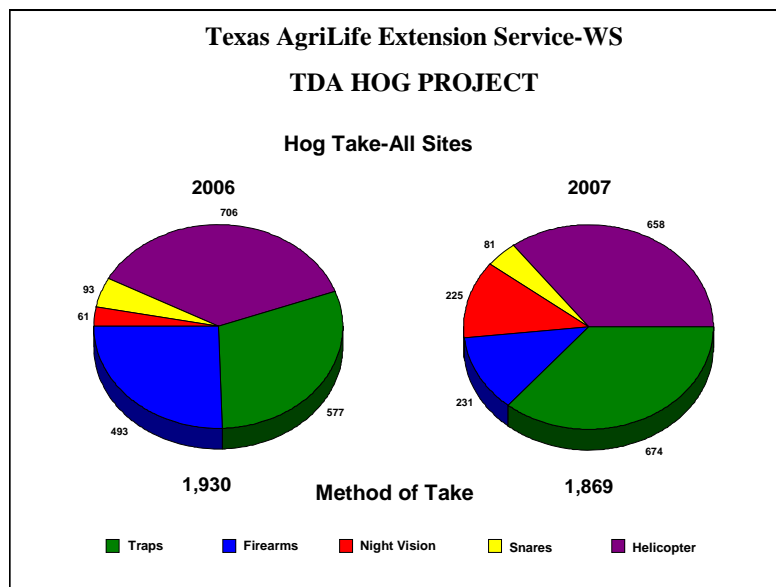


Figure 13. Control methods used to remove hogs by year from all sites combined.

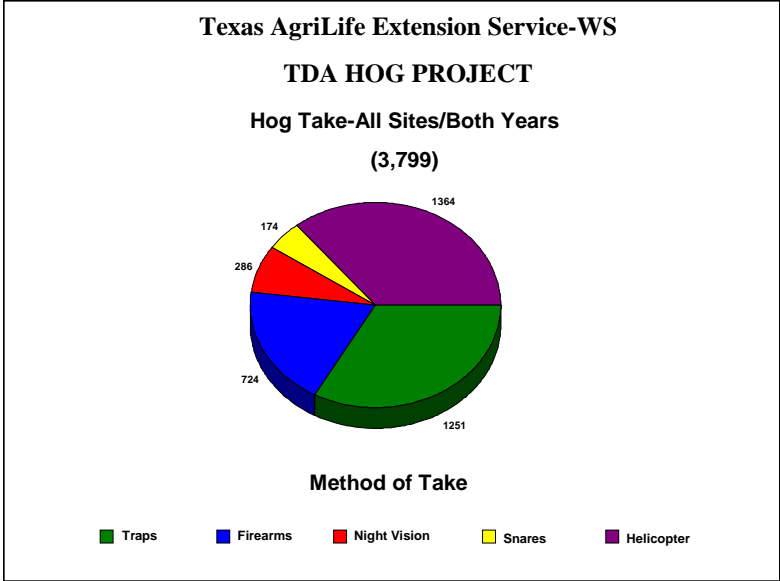


Figure 14. Total number of hogs removed by method, 2006-07.

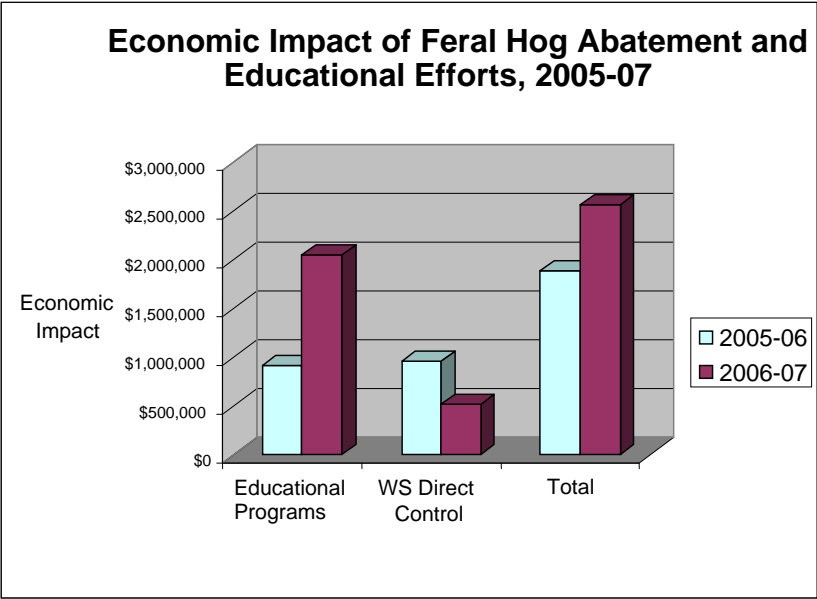


Figure 15. Total economic impact of AgriLife Extension educational programs and WS technical support.

On a Likert Scale of 0 to 10 (with 0= Not Likely and 10 = Likely), a statewide Customer Satisfaction Rating of 9.1 was recorded for cooperators when asked the likelihood of recommending Texas AgriLife Extension Service-Wildlife Services as information sources/technical assistance for controlling feral hogs. In addition, a Net Promoter Score calculated from the Likert Scale data revealed

that cooperators (Net Promoters) of the program rated 71% (NPS scores of 50% to 80% are indicative of highly efficient agencies/companies). See Appendix 5 and Figures 16 and 17.

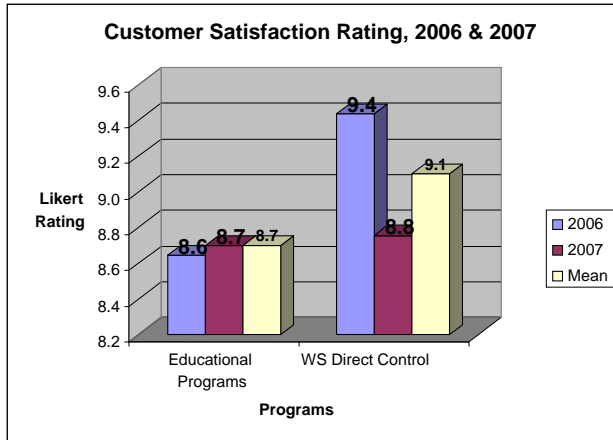


Figure 16. Customer Satisfaction Ratings among WS cooperators and educational program participants.

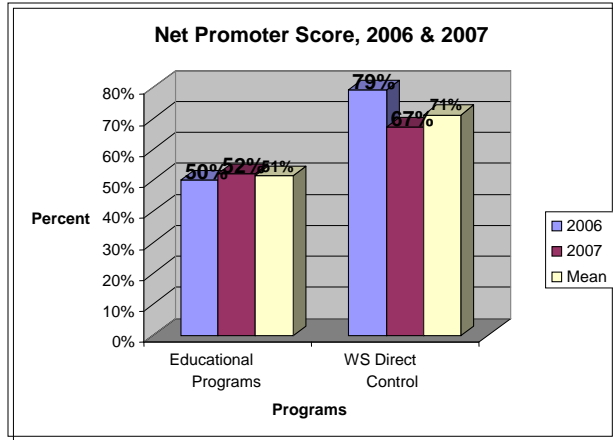


Figure 17. Net Promoter Scores among WS cooperators and educational program participants.

Wildlife Services technicians and troubleshooters worked daily with cooperators using various legal means to abate damage via control of feral hog populations (Figure 14). Over two years, a total of 3,799 feral hogs have been removed from 48 cooperator’s properties representing approximately 223,017 acres.

STATEWIDE EDUCATIONAL/OUTREACH PROGRAMS (INDIRECT CONTROL)

A major component of the Feral Hog Abatement Project conducted by the Texas AgriLife Extension Service was indirect control in the form of education/outreach programming conducted statewide by county Extension agents, Extension wildlife specialists and Wildlife Services biologists and technicians. At many educational events, a multi-agency approach was utilized to deliver information to clientele. An example of a particularly successful program format included presentations made by AgriLife Extension faculty/staff, Texas Parks and Wildlife (Wildlife and Law Enforcement Division personnel) and Texas Animal Health Commission representatives. Additional speakers utilized when available included hog buyers representing various processors and local private trappers.

A total of 67 educational events were conducted in 66 counties for an estimated 5,197 participants during 2006-07. Programs varied in length from one hour (presentations as part of pesticide re-certification programs and wildlife management seminars) to ½ to full day programs (indoor and/or outdoor). A particularly effective format involved including multiple agency

speakers (Texas Parks and Wildlife, Texas Animal Health Commission, Texas AgriLife Extension Service and individuals (landowners, private trappers, processors). Samples of program agendas are provided in Appendix 6.

A total of 2,281 surveys (Appendix 4a and 4b) were completed for a return rate of 44%. The survey return rate would have been even higher since multiple program participants often represented the same landholding (i.e. families). Survey respondents reported that the most common types of negative impacts caused by feral hogs were to pastures (82%), fences, water troughs or other improvements (46%) and loss of owner/employee time (44%). See Figure 18.

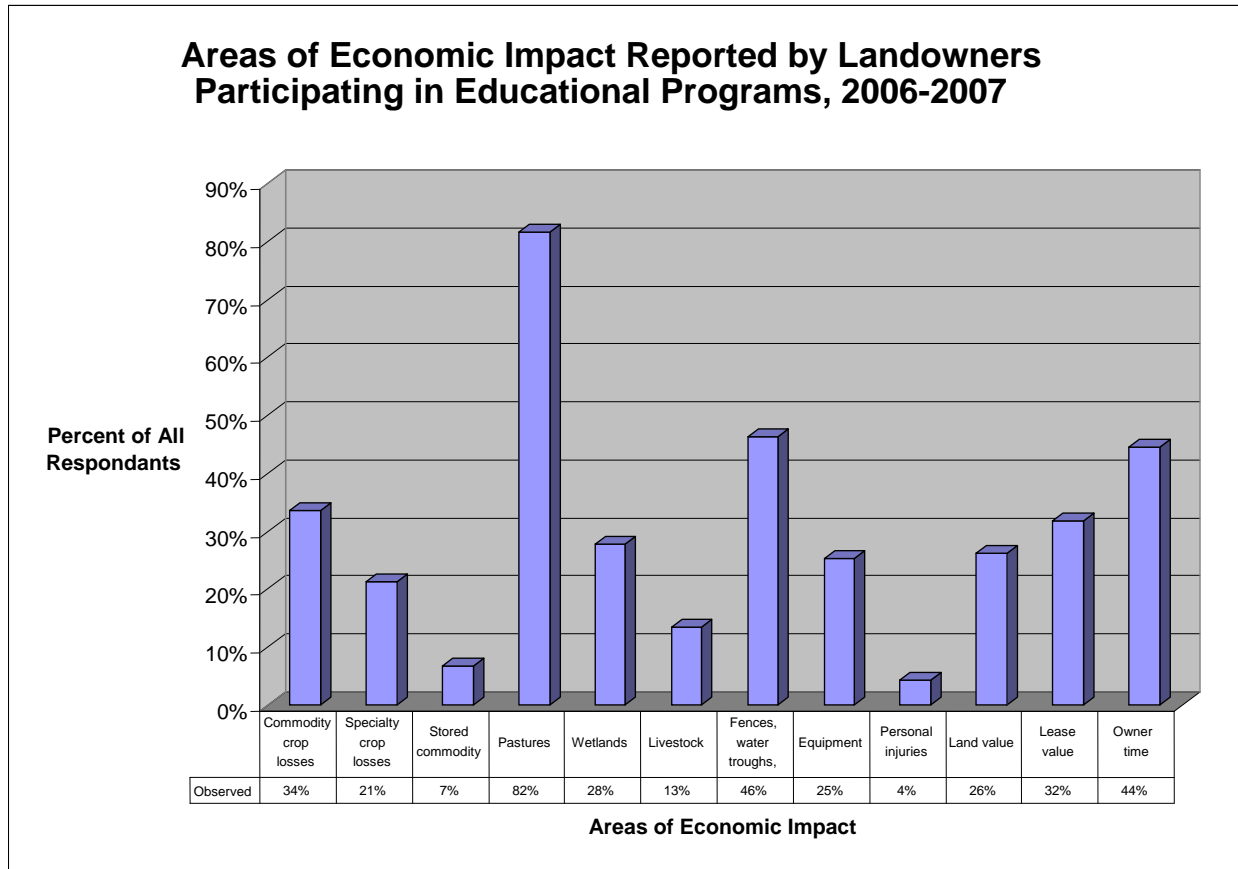


Figure 18. Areas of economic impact reported by landowners participating in TCE educational programs, 2006-2007.

Respondents indicated that landowner hunting (57%) and trapping/destroying feral hogs (57%) were the most common control methods employed to abate feral hog damage (Figure 19). Despite being extremely popular, conventional hunting/shooting by untrained personnel is known to be a highly inefficient method of controlling feral hog populations by causing them to become more nocturnal and/or more difficult to trap. However, landowner-initiated trapping using recommended equipment and techniques has proven to be a much more effective method for hog removal. Much of the positive feedback from program participants centered upon

information delivered relative to the proper design and use of traps, bait selection and determining the most effective locations to place traps (Figures 20 and 21).

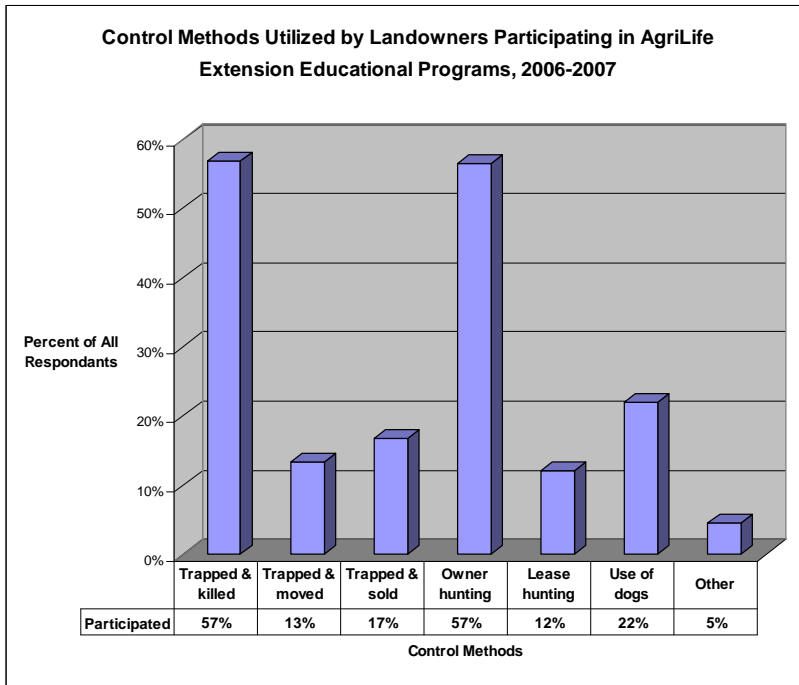


Figure 19. Control methods utilized by landowners participating in educational programs conducted in 2006-07.



Figure 20. A well designed large hog trap.



Figure 21. Landowners inspect a feral hog trap during a multi-county field day.

Based on data collected from the modified survey form (Appendix 4b), a total of 702 of 721 respondents (97%) indicated that they had increased their knowledge of feral hogs and their control by attending an AgriLife Extension program. Program participants were also asked to rate their knowledge levels before and after the program they attended on four different topics using a Likert Scale with rating 1 through 5 where 1=no knowledge, 3= some knowledge and 5=a high level of knowledge. Percent knowledge gains by topic were 53.3% for types/extent of damage, 72% for legal control options, 74% for feral hog biology and 75% for efficient trap/bait techniques. The knowledge gained averaged 68% across all four topics for respondents (Figure 22).

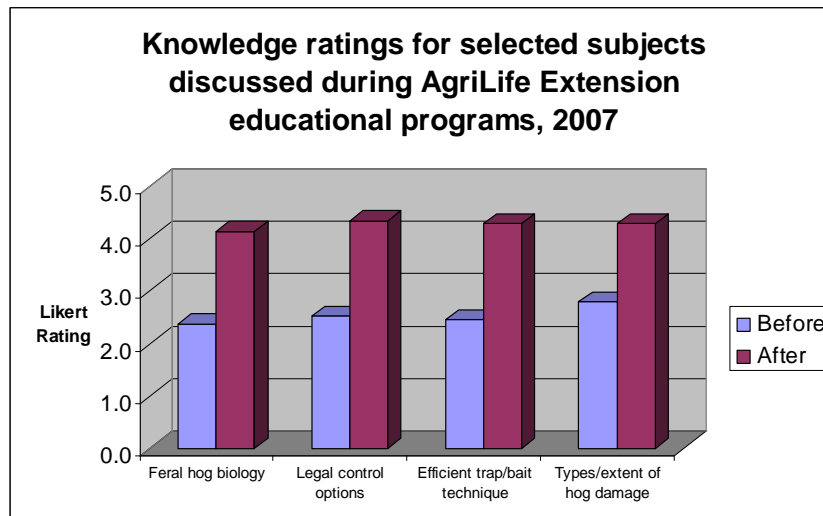


Figure 22. Knowledge gained based on results of Appendix 4b.

When asked which new practices they planned to adopt, 55% indicated they planned to use larger traps, 45% planned to wear protective eyewear and gloves when field-dressing feral hogs to avoid disease transmission, 44% planned to pre-bait traps to encourage consistent hog visits and 41% planned to utilize baits with scent appeal in order to attract feral hogs to traps (Figure 23). Interestingly, only 22 of 721 respondents (3%) reported receiving income from feral hogs. This equated to an average income of \$1,489 during the previous year for the 22 landowners reporting that they sold feral hogs and/or leased hunting rights. Overall, respondents planned to adopt an average of 3.2 practices of the 8 practices identified to better manage future feral hog damage.

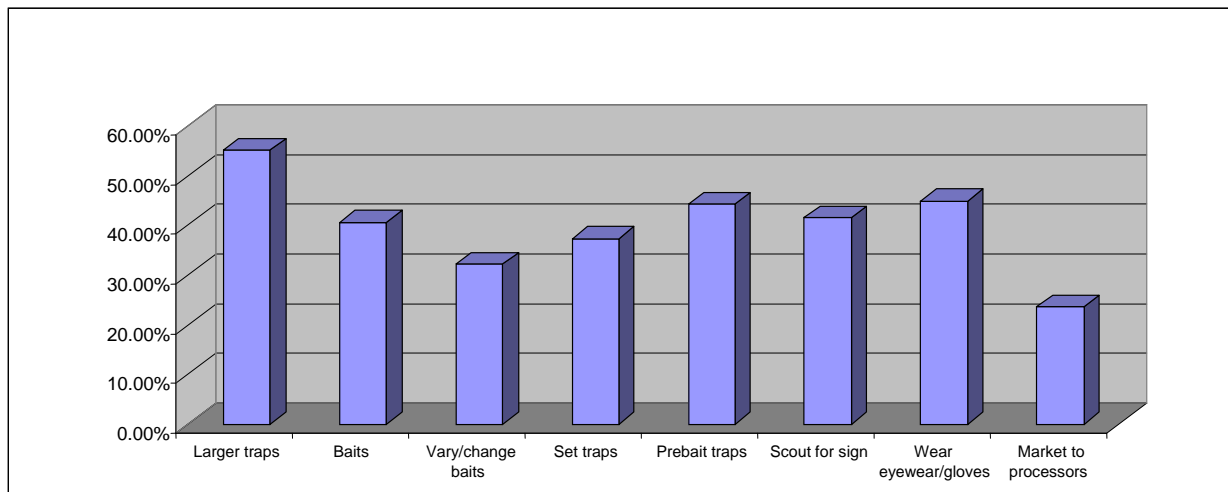


Figure 23. Proportion of respondents planning to adopt selected practices after attending AgriLife Extension educational programs, September-December, 2007.

All program participants were asked to rate the likelihood of them recommending the Texas AgriLife Extension Service to family, colleagues and friends as an information source on feral hogs. The mean statewide Customer Satisfaction Rating was 8.7 (on a Likert Scale of 0 = Not Likely and 10 = Likely). As expected, the rating by clientele receiving indirect control was slightly lower than the 9.1 CSR assigned by cooperators that received benefited from direct (one-on-one assistance) control (Figure 16).

The Net Promoter Score (a measure of your entity's or program's growth engine and efficiency) identifies a company's or agency's program promoters (defined here as the % of clientele rating AgriLife Extension as a 9 or 10) minus the program detractors (defined as the % of clientele rating AgriLife Extension as a 6 or below) using the previously described Likert Scale (Appendices 4a and 4b). Companies/agencies with the most efficient growth engines receive Net Promoter Scores of 50% to 80% from their customers (Appendix 5). The NPS that AgriLife Extension received from participants in these feral hog abatement awareness programs was 51% indicating that indirect control efforts were effective (Figure 17). As expected, the NPS among educational program participants was also lower than the 71% value assigned by cooperators receiving one-on-one assistance in the form of direct control via Wildlife Services.

Education/outreach program participants were also asked to rate the economic impact or value of the information they received. A total of 44% of the program participants provided economic data via the survey (Appendices 4a and 4b). Respondents estimated the total economic impact of feral hog damage incurred in the previous year (prior to attending the program) at \$6,252,044. They anticipated damage to decrease during the upcoming year to a total of \$3,273,223 based on their knowledge gains and the information they received. Therefore, as a result of what they learned at these programs, participants valued the information received at \$2,978,821—resulting in an estimated 48% decrease in anticipated economic losses attributable to AgriLife Extension's indirect control efforts. This equates to an average savings of \$2,108 per survey respondent that responded to the economic impact questions (n = 1,413) and a benefit to

cost ratio of 19.60 to 1.0 or \$19.60 return on every \$1.00 invested in indirect control efforts over the two year life of the project.

Following the project, comments were solicited from random program participants as to the utility and effectiveness of direct and indirect control efforts/education. Samples of testimonials are shown in Appendix 3.

ADDITIONAL ACTIVITIES

Internal Project Management/Training Efforts

The project manager hosted voluntary teleconferences for team members from each site, including landowners, and the statewide team. Teleconferences included administrative personnel from AgriLife Extension regions and districts where project sites are located. Teleconferences assisted in maintaining contact with project sites, coordinating additions to project areas within each of the three sites, planning educational events and served as a sounding board for ideas and problems encountered by each project site team and their landowner cooperators.

A 2006 project staff meeting was held for all Texas AgriLife Extension Service personnel involved in the project. Also in attendance were the Director of AgriLife Extension, Director of Wildlife Services and the Extension Wildlife and Fisheries Program Unit Head. The meeting was held to coordinate activities, discuss progress and problems, direction of the project and to monitor impact data from all direct and indirect control efforts.

The project manager, principle investigator, and project economist also met routinely to compile, analyze and report survey data. Progress reports were prepared and forwarded to the Texas Department of Agriculture each quarter throughout 2006-07, an annual report was produced following Year 1 of the project in 2007 and a final report was submitted after project completion in 2008.

Invited in-service trainings were provided to the AgriLife Extension Entomology Project Group and District 5 county Extension agents on integrated pest management strategies for feral hogs.

Feral Hog Website

A feral hog website (<http://feralhog.tamu.edu>) was developed and maintained to provide the public and media with information on feral hog life history and control as well as the status of the abatement project. During the two year project, there were a total of 31,374 unique hits and 76,830 pages accessed from the website.

Media Efforts

Media interest in feral hogs, their damage and the Feral Hog Abatement Pilot Project remained high throughout the entire project. The principal investigator was charged with the primary responsibility of providing interviews upon request to various print, television and radio media outlets. Television interviews regarding the Feral Hog Abatement Pilot Project were provided and aired on the

national broadcasts of ABC's Evening News and Nightline, National Geographic Television, CBS and ABC (both Tyler, Texas affiliates), CBS (Longview, TX affiliate), ESPN Outdoors, Iowa Public Television and The History Channel (Figure 24). Newspaper interviews were conducted with the New York Times, Associated Press, Bryan Eagle, San Antonio Express (3), Houston Chronicle (2), Tyler Morning Telegraph (2), Mount Pleasant Daily Tribune, Salem (OR) Statesman Journal, Nacogdoches Sentinel, Longview News Journal, Hillsboro Reporter, Lockhart Sentinel Times, Dallas Globe, Business Weekly, Los Angeles Times and the Dallas Morning News. One magazine article was authored for Texas Wildlife Association's magazine. Numerous other newspaper articles and radio interviews (i.e. Farm Bureau, Lone Star Outdoor News) resulted from AgriLife Extension statewide news releases (agnews.tamu.edu) on feral hogs and the Abatement Project. One podcast on feral hogs was prepared and placed on the AgriLife Extension feral hog website.



Figure 24. A television station interviews a Texas landowner in a feral hog damaged hay meadow.

National/International Interest

Interest in this project among other states was also extremely high. These states range from those with almost no hog populations present to those, like Texas, that have almost all available feral hog habitat occupied. A variety of agencies dealing with feral hog abatement contacted AgriLife Extension for additional information and updates on the pilot project. Presentations that detailed the design and results of the Feral Hog Abatement Pilot Project were presented by the principal investigator at National Symposium on Wild Pigs in Mobile, Alabama (2006) and by the principal and co-principal investigator in St. Louis, Missouri (2008).

One cooperating principal investigator was an invited speaker at the Maui (Hawaii) Ungulate Management Conference in 2008. Information provided included an overview of successful hog removal techniques as well as performance measures.

SUMMARY

The Feral Hog Abatement Project resulted in the removal of 3,799 feral hogs from 48 cooperator properties totaling 230.017 acres and resulting in a savings of \$1,480,491. Education/outreach efforts reached 5,197 clientele via 67 educational events and were valued at

\$2,978,821. Survey respondents increased their knowledge of feral hogs by an average of 68% and planned to adopt 3.2 new management practices. In total, the abatement study provided \$4,459,312 in direct economic benefit resulting in a benefit to cost ratio of \$11.42 for every \$1.00 invested in the project.

Citation: Higginbotham, Billy, Greg Clary, Larry Hysmith, and Michael Bodenchuk. 2008. Statewide feral hog abatement pilot project. Texas AgriLife Extension Service. 45 pp.

Appendix 1
Texas AgriLife Extension Service-Project Personnel

Galen Logan-Camp County Extension Agent-Agriculture
John Hill-Wildlife Services Technician-Camp County
Gideon Jennings-Hill County Extension Agent-Agriculture
Mike Gage-Navarro County Extension Agent-Agriculture
Derek Scasta-Navarro County Extension Agent-Agriculture
Dustin Parker-Wildlife Services Technician- Hill and Navarro Counties
David Pipken-Wildlife Services Technician-Hill and Navarro Counties
Terry Shriver-Wildlife Services Damage Management Biologist-Ft. Worth District
Steve Meek-Wildlife Services Assistant District Supervisor-Ft. Worth District
Jan Loven-Wildlife Services District Supervisor-Ft. Worth District
Brent Batchelor-Matagorda County Extension Agent-Agriculture
Jerry Falke-Wildlife Services Damage Management Biologist-Bryan District
T.J. Muir-Wildlife Services Damage Management Biologist-Bryan District
Tommy Taylor-Pilot-Wildlife Services
Kelly Spinks-Pilot-Wildlife Services
Doug Steen-Wildlife Services Assistant District Supervisor-Bryan District
Gary McEwen-Wildlife Services District Supervisor-Bryan District
Eddie Davis-Wildlife Services-Wildlife Biologist-College Station District
Marty Sedden-WS-Wildlife Damage Management Specialist-Mobile Forces-San Angelo District
Gary Stevens-Wildlife Services-Troubleshooter-College Station District
Chris McPherson-Wildlife Services-Wildlife Damage Management Technician-College Station Dist.
Bruce Leland-Wildlife Services Assistant Director-San Antonio
Mike Bodenchuk-Wildlife Services State Director-San Antonio
Larry Hysmith-Project Manager and Extension Program Specialist-College Station
Greg Clary-Project Co-Investigator and Extension Economist-Overton
Billy Higginbotham-Principal Investigator and Extension Wildlife and Fisheries Specialist-Overton

Special thanks to former TAMU-WFS Associate Department Head Neal Wilkins, Extension Wildlife Specialists Jim Cathey, Ken Cearley, Jim Gallagher and Dale Rollins and numerous county Extension agents for supporting indirect control educational program efforts conducted statewide.

Appendix 2

2006 Cooperator Survey Forms By Pilot Site

**Coastal Prairie
2006 Economic Impact Survey
Feral Hog Management Pilot Program**

The initial survey you completed nearly a year ago for Texas Cooperative Extension’s Wildlife and Fisheries and Wildlife Services Units established baseline estimates of economic losses during 2005. We now need estimates of economic losses on your property and of costs associated with control measures used throughout 2006.

This survey is for you to share information about control and management measures employed on your property and the economic value of losses you observed during 2006.

As before, all individual information remains confidential. Reports will include only summaries of landowner information. Contact information is necessary to insure participants receive all correspondence and reports associated with the project. ***YOUR PARTICIPATION IN THIS PROJECT IS APPRECIATED.***

Contact _____ Farm Name _____
 Address _____ City _____ Zip _____
 Office Phone _____ Email _____
 Current Wildlife Services cooperator: Yes _____ No _____

Please provide as much detail as possible about the control measures used on your property and the best estimate of your losses documented for the entire year 2006.

Control Activities during 2006

Control measure	Estimated number of hogs removed	Estimated number of events
Trapped & destroyed		
Trapped & moved from premise		
Trapped & sold		
Owner & employee hunting		
Lease hunting		
Use of dogs		
Flown with helicopter		
Other:		
Other:		

Please list any other control measures that have been taken that are not accounted for in the above table:

Economic Losses during 2006

Please provide as much detail about economic losses in your crop and livestock enterprises during 2006. Note additional information concerning crop, commodity or property losses and additional expenditures and time spent to repair damages attributed to feral hogs that are not reflected in the table. Information you provide this year will be compared with previous surveys to evaluate the impact of control measures. Please be as realistic as possible so we get an accurate account of what is happening on your property, whether positive or negative.

<i>Crop and commodity losses in 2006</i>				<i>Livestock, property and other losses in 2006</i>			
Crop or Commodity	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)	Property or Livestock	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)
Corn				Pasture			
Grain Sorghum				Other Land			
Cotton				Wetlands			
Hay				Fences			
Soybeans				Livestock specify type:			
Rice				Disease transmission			
Turf				Equipment: (specify type)			
Orchards, incl. native pecans				Vehicles			
Stored commodities				Personal injury			
Other:				Water losses			
				Loss of land value			
				Other			

Make any additional notes on bottom or back of this page

¹Total losses minus payments from insurance plus cost of insurance premiums

²Additional cash expenses not included in crop or commodity losses, such as farm operations to level land, repair levees, repair equipment, etc.

Blacklands

2006 Economic Impact Survey

Feral Hog Management Pilot Program

The initial survey you completed nearly a year ago for Texas Cooperative Extension's Wildlife and Fisheries and Wildlife Services Units established baseline estimates of economic losses during 2005. We now need estimates of economic losses on your property and of costs associated with control measures used throughout 2006.

This survey is for you to share information about control and management measures employed on your property and the economic value of losses you observed during 2006.

As before, all individual information remains confidential. Reports will include only summaries of landowner information. Contact information is necessary to insure participants receive all correspondence and reports associated with the project. ***YOUR PARTICIPATION IN THIS PROJECT IS APPRECIATED.***

Contact _____ Farm Name _____
 Address _____ City _____ Zip _____
 Office Phone _____ Email _____
 Current Wildlife Services cooperator: Yes _____ No _____

Please provide as much detail as possible about the control measures used on your property and the best estimate of your losses documented for the entire year 2006.

Control Activities during 2006

Control measure	Estimated number of hogs removed	Estimated number of events
Trapped & destroyed		
Trapped & moved from premise		
Trapped & sold		
Owner & employee hunting		
Lease hunting		
Use of dogs		
Flown with helicopter		
Other:		
Other:		

Please list any other control measures that have been taken that are not accounted for in the above table:

Economic Losses during 2006

Please provide as much detail about economic losses in your crop and livestock enterprises during 2006. Note additional information concerning crop, commodity or property losses and additional expenditures and time spent to repair damages attributed to feral hogs that are not reflected in the table. Information you provide this year will be compared with previous surveys to evaluate the impact of control measures. Please be as realistic as possible so we get an accurate account of what is happening on your property, whether positive or negative.

<i>Crop and commodity losses in 2006</i>				<i>Livestock, property and other losses in 2006</i>			
Crop or Commodity	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)	Property or Livestock	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)
Corn				Pasture			
Grain Sorghum				Other Land			
Cotton				Wetlands			
Hay				Fences			
Orchards				Livestock specify type:			
Specialty crops				Disease transmission			
Stored commodities				Equipment: (specify type)			
Other				Vehicles			
				Personal injury			
				Water losses			
				Loss of land value			
				Other			

Make any additional notes on bottom or back of this page

¹Total losses minus payments from insurance plus cost of insurance premiums

²Additional cash expenses not included in crop or commodity losses, such as farm operations to level land, repair levees, repair equipment, etc.

**Post Oak Savannah/Pineywoods
2006 Economic Impact Survey
Feral Hog Management Pilot Program**

The initial survey you completed nearly a year ago for Texas Cooperative Extension’s Wildlife and Fisheries and Wildlife Services Units established baseline estimates of economic losses during 2005. We now need estimates of economic losses on your property and of costs associated with control measures used throughout 2006.

This survey is for you to share information about control and management measures employed on your property and the economic value of losses you observed during 2006.

As before, all individual information remains confidential. Reports will include only summaries of landowner information. Contact information is necessary to insure participants receive all correspondence and reports associated with the project. ***YOUR PARTICIPATION IN THIS PROJECT IS APPRECIATED.***

Contact _____ Farm Name _____
 Address _____ City _____ Zip _____
 Office Phone _____ Email _____
 Current Wildlife Services cooperator: Yes _____ No _____

Please provide as much detail as possible about the control measures used on your property and the best estimate of your losses documented for the entire year 2006.

Control Activities during 2006

Control measure	Estimated number of hogs removed	Estimated number of events
Trapped & destroyed		
Trapped & moved from premise		
Trapped & sold		
Owner & employee hunting		
Lease hunting		
Use of dogs		
Flown with helicopter		
Other:		
Other:		

Please list any other control measures that have been taken that are not accounted for in the above table:

Economic Losses during 2006

Please provide as much detail about economic losses in your crop and livestock enterprises during 2006. Note additional information concerning crop, commodity or property losses and additional expenditures and time spent to repair damages attributed to feral hogs that are not reflected in the table. Information you provide this year will be compared with previous surveys to evaluate the impact of control measures. Please be as realistic as possible so we get an accurate account of what is happening on your property, whether positive or negative.

<i>Crop and commodity losses in 2006</i>				<i>Livestock, property and other losses in 2006</i>			
Crop or Commodity	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)	Property or Livestock	Total Net Loss (\$)¹	Addnl losses (\$)²	Addnl owner and unpaid labor (hrs)
Corn				Pasture			
Grain Sorghum				Other Land			
Peaches				Wetlands			
Pecans				Fences			
Other Orchards				Livestock specify type:			
Hay				Disease transmission			
Stored commodities				Equipment: (specify type)			
Specialty crops				Vehicles			
Other				Personal injury			
				Water losses			
				Loss of land value			
				Other			

Make any additional notes on bottom or back of this page

¹Total losses minus payments from insurance plus cost of insurance premiums

²Additional cash expenses not included in crop or commodity losses, such as farm operations to level land, repair levees, repair equipment, etc.

Appendix 3

Landowner Testimonials Regarding AgriLife Extension's Direct and Indirect Control Efforts

Post Oak Savannah/Pineywoods

Additional losses - \$10,000 in deer corn, food plots, pond dam. Wildlife Services have helped with control in corn fields, hay meadows and chicken houses. I have noticed a decline in feral hog damage since the inception of the abatement project, not only on my property, but Pilgrim's Pride property as well. This is a direct correlation between the educational efforts of Texas AgriLife Extension as well as Wildlife Services support staff. I wish the program could continue and I continue to place calls to legislators to notify them of the major concerns associated with crop damage, pasture damage and other ecological impacts, such as erosion and loss of top soil. I am very adamant about feral hog control and continue to utilize fencing as a source of exclusion. We need help! There is money available to build ponds but no help to control hogs.

Hogs have virtually destroyed the hay meadows and pasture land, making it almost impossible to travel over with hay equipment, sprayers or shredders. All land needs to be disched and leveled and replanted due to hog damage the past several years. This was a great program from Extension. I appreciate the opportunity to learn from the experts on how to control our feral hog populations. The trapping and hunting of the wild hogs on our ranch and the other ranches adjoining us greatly reduced our problems. Unfortunately, most landowners do not have the time or make time to devote to feral hog control on their property. Your assistance was a tremendous asset. We are just now starting to see hogs drift back onto our property. If programs like this could be expanded, we would prevent the rapidly growing feral hog populations in East Texas.

I lost about 10 acres of pasture for grazing due to the hogs. Due to the amount of damage that has been done to the pastures over the 20 years I have owned the ranch you would have to disc and level the entire 400 acres. I have seen a reduction in the hog population. The hunting activity and trapping reduced some of the hogs and also kept them moving to different areas. This will help in the reduction of the population, but it will not eliminate them. (2005) - To repair the total damage caused by the hogs over the years, it would cost \$16,240. \$40 per acre to plow. I have planted ryegrass in the past, but hogs have destroyed about 1/3 of it. The hogs have made it difficult to shred pastures. It takes twice as long due to the roughness of the pastures.

Additional losses – Damage to erodible land. Soil erosion caused by disturbed soil. Cost share for hog proof perimeter fencing through EQUIP program would be beneficial.

How hogs might be contaminated - Eating spoiled poultry feed containing certain antibiotics. Eating gopher poison. Need info on types of fences proven to control wild hogs.

Benefits of Wildlife Services – During the time WS are actively working my area, damage is much less. Wildlife Services has provided me with valuable experience and information about controlling wild hog damage on my farm near Pittsburg. The educational outreach programs conducted in cooperation with my local county agent have helped me better manage my

resources and time in my efforts to control this costly problem. The direct control portion of the Wildlife Services, however, proved to be the single most effective method in controlling hog damage. Through actual hunting and trapping, and assisting me in establishing my own hunting and trapping methods, Wildlife Services has proven to be a valuable resource to landowners and producers in my area.

Benefits of Wildlife Services – I feel that WS have done an excellent job keeping the numbers down at a steady rate. However, I am still losing pasture, hay meadows, etc. as a result of this feral hog infestation. This program needs to be reinstated with more manpower, not less.

Blackland Prairie

Significant difference in number of hogs, which is evident from hay fields and lack of damage on my properties. Educational program benefits: Increased knowledge of variable methods allows person ability to continue removing hogs when other methods are simply not working.

Benefits of Wildlife Services: They helped control hogs during the critical growing season. Hogs became harder to trap once grain matured.

Additional Losses: Hog roots were so bad and rough on equipment and operator (myself) over the past few years that it has shook my mowing tractor to pieces and also hurt my back to where I'm having to see a Dr. It has also affected my lifestyle or what I'm able to do.

Wildlife Services: Not as many fresh hog roots due to the reduction in numbers of the hogs rooting in pastures. David Pipkin did the trapping and hog management on my place south of Kerens. He did a good job in reducing the numbers of hogs and I hope you will continue the program in future years.

Additional Losses: This situation has caused us not to be able to harvest and has reduced the amount of hay we could bale. Wildlife Services: The WS was very helpful and willing to do whatever it took to help us out.

Wildlife Services: Since hog traps have been taken up, hog numbers have significantly increased. After just one year of the program, damage to my milo was reduced probably by 75%. It is my belief that if assistance is not provided by the state, hog numbers will become unmanageable and grain crops will be very difficult to grow as previous history on my farm has shown up to 50% of my crops have been damaged by hogs. The Feral Hog Program has been a benefit for all grain farmers and should be continued and supported by the state to help farmers continue to learn new control methods.

Wildlife Services: Due to WS, we had very little to no damage to our row crops compared to 2006. Job well done! Without this service, future row crop plantings would be questionable. Have been pleased with working with the staff in Hill County. Great reduction in numbers of feral hogs. Huge success due to multiple techniques used. Noticeable difference! Educational program benefits of familiarity with hog traps, snares and hunting is very beneficial in the overall removal of feral hogs.

Wildlife Services: I have realized about 50% decrease in damage.

Wildlife Services: This effort is worthwhile and would like to see the program continued.

Coastal Prairie

Wildlife Services: Hogs are an extremely aggressive exotic animal that are devastating to native, natural habitats, as well as agricultural areas. The assistance from WS is a good start on eradicating feral hogs.

Additional losses: Our main damage is to the rice levees that maintain our flood situation. These levees are damaged randomly by hogs which makes it expensive and time consuming to locate such damage. Additional comments: Your help is greatly appreciated. It is hard to pinpoint actual losses, but they can be very substantial. I even quit leasing a farm because they would not let me try to control the hogs. The control program needs to expand!

Wildlife Services: Helicopter control has been a large economic value. The airplane is greatly appreciated – the results are great. I see much less feral hog damage in our rice due to the aerial hunting. The spring and summer hunts eliminate problem hogs and the population in the area hunted is less than a few years ago when the project began. I can honestly say this program has saved me money in levy repair damage cost and less grain loss in the fields.

Additional Losses: Have experienced considerably less damage in 2007 as compared to 2006.
Wildlife Services – Would like to see WS come back to continue removing hogs.

Wildlife Services: Bring the helicopter back – very beneficial!

Additional losses: The torn-up pastures make ground application of pasture herbicides very difficult. Two miles per hour is maximum speed possible for this process.

Additional losses: Hogs also damage levees on wildlife ponds.

Wildlife Services: They are a professional group. Good to work with. We need to keep this program.

Wildlife Services: Earlier in the year would be more helpful.

Wildlife Services: Really like the helicopter because they can really do some good control. That we can't do on the ground on tractors.

Additional losses: Dry weather has caused hogs to move, not near as much activity as '05.

Wildlife Services: Helped slow hog damage.

Additional losses: Additional \$7,500 loss of rice due to hogs.

Additional comments: We estimate 50 acres pasture land taken out of production due to hog rooting. At \$25/acre on 50 acres would be \$1,250/year. The things I learned at the feral hog program have allowed me to come up with a better feral hog management plan for my ranch. We have incorporated many of the suggestions into our program and have seen an improvement in our situation.

Additional losses: I do a lot of cattle assessment on foot. I constantly have to watch for hog holes so I don't twist an ankle. We live on bottom land along Lineville Creek, along the Brazoria Co line. We are bordered by several sets of woods. My last count on several groups of hogs last week was 20-30 large hogs, 50-60 (25-30 lbs) and many babies. Additional comments: We had to have a dozer come in and smooth out our pond. When the water started to dry up, the hogs came in and completely destroyed the bottom and sides.

Additional losses: On another farm I lease, an additional \$10,000 damage to rise by hogs has occurred in 2006. This farm is not covered by this survey.

Wildlife Services: Landowners working together is the only way we can control this issue. WS makes that happen!

Due to my current job, I am unable to give the time to control efforts needed, but I do not observe near as many rootings as I have seen in many years. Wildlife Services: I am also cooperating with WS on coyote control. I see less coyotes when I go to the pastures.

Wildlife Services: Aesthetically, the property is improving with a noticeable decline in rooted up areas, particularly along the roadways. The aerial hunting has helped reduce our feral hog population on the Hawkins Ranch a significant amount. The damage is less in all the pastures and we see fewer hogs in general.

We are able to drive through some areas that we were unable to access previously due to feral hog damage. The aerial hunting has allowed us to improve our management on the Hawkins Ranch.

Additional Comments

As a result of attending the July 26, 2007 Cooperative Extension feral hog program, we invited Richard Kincaid to trap hogs on our property. Two traps, designed and built by Mr. Kincaid, were placed in areas where there was overwhelming evidence of hog presence. Two sows and five piglets were caught and eradicated. After capturing the seven hogs, there was little evidence of hog activity in the area for several months. Upon observing new traces of hogs in the area, one trap was set. One feral gilt was captured and eliminated. The information provided by Brock Fry, Billy Higginbotham and Greg Hawkins during the program plus the opportunity to network with Mr. Kincaid has been beneficial to us. The program is an excellent program and we recommend it for everyone who has feral hogs on or near their property.

“The educational program made me very aware of the problem with feral hogs. We have not been dealing with hogs as much as some landowners, but we know it will only get worse over time. The program taught us what to do as the problem escalates such as: moving traps around, changing baits and considering snaring as a control option”.

I enjoyed the feral hog program you provided during the past year. I was surprised at how much of a problem the control of these hogs seems to be. I hope we can have another program on the same topic – maybe bring a couple of the smaller ones to show.

I thought the program at Welder Wildlife was excellent. Following the program, we had 8 traps made and has been trapping hogs. I sells some, give some to friends and has shot some in the field. As a result, I have seen a slight reduction, however, the hogs continue to come to his fields. I suggest you (AgriLife Extension) do more programs with speakers that get to the point and give tricks to catching hogs.

We have not had as much of a problem with feral hogs as some, but will be plowing about 40 acres in a hay field to fix damage that feral hogs did cause. We have used hunters a few times to kill hogs, but we know that we have to use the trapping methods taught by Wildlife Services staff. I think this program is necessary because feral hogs are a growing problem.

We need continuing information and help regarding the control of feral hogs. Dr. Higginbotham’s presentation was a good start. However, we need more. I have a significant problem with the hogs digging up my orchard and breaking irrigation risers in the orchard. I have used many of the methods described by Dr. Higginbotham as it has helped. But I find that the hogs learn fast and trapping them becomes harder each year. New ideas and methods are critical for the control of the hogs. I would also like more information regarding any research that is being done to reduce populations.

I am not a “hog hunter” so I didn’t know much about feral hog habits except that they can do much damage to your property. Dr. Higginbotham said shooting at them with firearms would cause them to not visit your property as often. I was not aware of this, but after his presentation, the “good Lord called 2 or 3 of them home” and after that, they visited me less often. I have not yet trapped any, but he gave many good ideas of trap construction, location of traps, etc. Not that I miss them, but so far in ’08, I have seen very few hog sightings, very few hog signs and very little damage. I am puzzled!

Appendix 4b
TEXAS COOPERATIVE EXTENSION - FERAL HOG SURVEY-INDIRECT CONTROL

You have recently participated in a program on feral hog life history, behavior and control information hosted by Texas Cooperative Extension. Please complete the following on the economic impact of feral hogs and the value of information you received. Your survey will assist us in planning future programs.

1. Place a check mark next to all the areas in which feral hogs had a negative impact on your property(s) *in the past year*.

- | | |
|--|--|
| <input type="checkbox"/> Growing or planting commodity crop losses | <input type="checkbox"/> Fences, water troughs, or other improvements |
| <input type="checkbox"/> Growing or planting specialty crop losses | <input type="checkbox"/> Equipment or vehicles |
| <input type="checkbox"/> Stored Commodities | <input type="checkbox"/> Personal injuries |
| <input type="checkbox"/> Pastures | <input type="checkbox"/> Loss of land value |
| <input type="checkbox"/> Wetlands | <input type="checkbox"/> Loss of lease value, damage to food plots/feeders |
| <input type="checkbox"/> Livestock (injury, deaths, diseases) | <input type="checkbox"/> Owner or employee time |

2. Place a check mark next to all the control methods you use on your property(s).

- | | | |
|---|---|--|
| <input type="checkbox"/> Trapped & destroyed | <input type="checkbox"/> Trapped & Sold | <input type="checkbox"/> Lease hunting |
| <input type="checkbox"/> Trapped & moved from premise | <input type="checkbox"/> Owner/Employee hunting | <input type="checkbox"/> Use of dogs |
| <input type="checkbox"/> Other (snares, aerial gunning) | | |

3. "I estimate my total economic losses due to feral hogs during the **previous year** to be about \$_____ on all my property(s). This includes all items checked above in Question 1.

4. **As a result of implementing what I learned at Texas Cooperative Extension workshop(s), I expect my losses due to feral hogs to be approximately \$_____ during the upcoming year.**

5. Did you increase your knowledge of feral hogs & control by attending this program? Yes___ No___

6. Rate your knowledge **before and after** the program on these subjects. Circle only one number for each answer choice with 1 = no little knowledge, 3 = some knowledge, 5 = high level of knowledge.

- | | | | | | | |
|-----------------------------------|--------|---|---|---|---|---|
| A. Feral hog biology | Before | 1 | 2 | 3 | 4 | 5 |
| | After | 1 | 2 | 3 | 4 | 5 |
| B. Legal control options | Before | 1 | 2 | 3 | 4 | 5 |
| | After | 1 | 2 | 3 | 4 | 5 |
| C. Efficient trap/bait techniques | Before | 1 | 2 | 3 | 4 | 5 |
| | After | 1 | 2 | 3 | 4 | 5 |
| D. Types/extent of hog damage | Before | 1 | 2 | 3 | 4 | 5 |
| | After | 1 | 2 | 3 | 4 | 5 |

7. Please place a checkmark by all practices that you plan to adopt in order to better manage feral hogs on your property:

- | | |
|---|---|
| <input type="checkbox"/> Use larger traps | <input type="checkbox"/> Pre-bait traps to encourage consistent hog visits |
| <input type="checkbox"/> Use baits with scent appeal | <input type="checkbox"/> Scout for hog sign (tracks, wallows, rubs, hair) |
| <input type="checkbox"/> Vary/change baits at different locations | <input type="checkbox"/> Wear eyewear and gloves during field dressing |
| <input type="checkbox"/> Set traps whenever fresh sign appears | <input type="checkbox"/> Market trapped hogs to processors to recoup losses |

8. Based on the information provided at the program, what is the likelihood that you would recommend Texas Cooperative Extension (includes Wildlife Services) to your family & friends as a contact for information on feral hogs & their control? Circle one number below with 0 = not likely and 10 = likely.

0 1 2 3 4 5 6 7 8 9 10

Not Likely

Likely

Appendix 5

NET PROMOTER SCORE

The Net Promoter Score is used to index company or program effectiveness. It is based on a book entitled “The Ultimate Question” by Fred Reichheld. It is in wide use among Fortune 500 companies and asks one simple question: **How likely are you to recommend us to family, friends and colleagues?** The “us” for this project is Texas Cooperative Extension as a source of information and technical assistance—in this case on feral hogs and their control. The calculation is simple—The clientele groups are asked to rate the likelihood of their recommending TCE on a 0 to 10 Likert Scale with 0 being “Not Likely” and 10 being “Likely”. Take the percentage of clientele receiving information at a program or receiving services that rated your entity either a 9 or 10 (called promoters) and subtract the percentage of clientele that rated you a 6 or below (called detractors). Don’t use the 7s and 8s (called passives) except to determine sample size percentages of the other two groups. The result of this calculation is your company’s or agency’s Net Promoter Score. The most efficient companies (or programs) usually rate 50% to 80%. A score of 5% to 10% means a company is sputtering along with its promoters barely outnumbering its detractors. Some companies even have negative Net Promoter Scores, meaning they are creating more detractors than promoters every business day. A brief example—100 clientele were surveyed following a TCE feral hog control program. A total of 25 clientele rated the program a 6 or below, 40 rated it a 7 or 8 and 35 rated it a 9 or 10. Therefore, the promoters, expressed as $35/100 = 35\%$ minus the detractors, expressed as $25/100$ or $25\% = 10\%$ NPS. Examples of Net Promoter Scores for some well known corporations include Amazon (73%), Ebay (71%), Apple (66%), Southwest Airlines (51%) and Dell (50%). For a more detailed explanation of NPS, web search “The Ultimate Question” or see www.netpromoter.com.

Appendix 6

Examples of Educational Program Agendas

Feral Hog Abatement Project - Fast Facts

- Two year project funded by Texas Department of Agriculture at a cost of \$390,000
- Involves educational programming conducted statewide
- Involved 42 cooperators owning or controlling 175,000 acres in 6 pilot counties (three geographical locations)
- In 2006, economic impact of educational programs was \$919,471 and direct assistance to cooperators \$944,591, for a total economic impact of the Project of \$1,864,062
- Benefit to cost ratio in 2006 alone of 7.2 to 1 or \$7.20 return for each \$1.00 spent on the project

Directions to Field Day Site:

From Hwy 271 in Pittsburg, turn East on Lafayette Street, go ½ mile. Turn left onto Arch Davis Road (FM 2254) and go 1.9 miles - continue on FM 2254 for 1.6 miles. Turn right onto CR 1120 for 0.4 miles. Arrive at 1047 CR 1120 - turn right. Signs will be posted at site.

Reference to trade names or commercial products is made with the understanding that no discrimination is intended and no endorsement by The Cooperative Extension is implied.

Individuals with disabilities who require special accommodations in order to participate in Extension-sponsored meetings are encouraged to contact the County Extension Office at 903-856-5005.

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability or national origin.

The Texas A&M University System, US Department of Agriculture and the County Commissioners Courts of Texas Cooperating

Texas Cooperative Extension

Feral Hog Management Field Day



May 17, 2007

Program conducted by

Texas Cooperative Extension

(Camp, Titus, Wood, Rains,
Franklin, Delta and Upshur
County Extension Offices)

Program Co-Sponsors:

Pilgrim Farms

Texas Parks and Wildlife

Texas Animal Health Commission

Texas Department of Agriculture

Agenda

2:00 pm	View exhibits/pickup information packets	4:45	Stop 3 - Box Trap/Snares/Firearms John Hill and Terry Shriver, Wildlife Services
2:30	Welcome/Orientation Pat Pilgrim, Pilgrim Farms Galen Logan, Camp CEA	5:30	Hamburger Supper
2:40	The Feral Hog Abatement Project Larry Hysmith, Texas Cooperative Extension Jeff Kilburn, Landowner/Cooperator	6:15	Marketing Opportunities of Feral Hogs to Processors Billy Smith, certified USDA buyer
3:00	Stop 1 - Teardrop-shaped trap John Hill and Terry Shriver, Wildlife Services; Disease Concerns and TAHC Regulations Regarding Trapping, Holding and Releasing Feral Hogs - Dr. Gregory Hawkins, TAHC	6:30	Life History and Control Strategies for Feral Hogs Billy Higginbotham, Texas Cooperative Extension
4:00	Stop 2 - Round Trap John Hill and Terry Shriver, Wildlife Services; Licensing Requirements for Hog Hunters Jerry Ash, Texas Parks and Wildlife	7:30	Administer Feral Hog Survey Announce Grand Door Prize Winner Pickup Pesticide Certificates Adjourn
Useful Websites			
Texas Cooperative Extension http://feralhogs.tamu.edu http://wildlife.tamu.edu http://wis.tamu.edu (Wildlife Services)		County Extension Agents	
Texas Animal Health Commission www.tahc.state.tx.us		Galen Logan, Camp CEA, 903-856-5005	
Texas Department of Agriculture www.agr.state.tx.us		Mike Berry, Franklin/Delta CEA, 903-395-4400	
Texas Parks and Wildlife www.tpwd.state.tx		Stephen Gowin, Rains CEA, 903-472-2412	
		Brian Hill, Upshur CEA, 903-843-4019	
		Clint Perkins, Wood CEA, 903-763-2924	
		Kenny Rollins, Titus CEA, 903-572-0261	

Coastal Bend Feral Hog Management Symposium



Thursday, October 11, 2007
9:00 a.m. to 3:30 p.m.

Welder Wildlife Refuge
(Hwy 77, North of Sinton)

Registration fee \$10 per person.

Pre-registration is required by October 10th.
To register please call (361)364-6234

Topics include:

- Feral Hog Biology/Life History
- Feral Hog Research Update
- Feral Hog Disease Implications & TAHC Regulations
- Hunting License Requirements for Hog Hunters
- Value and Marketing of Feral Hog
- Feral Hog Control Options

CEU's: 1 Laws & Regulations & 1 General

Symposium Objective: Participants become familiar with feral hog biology and options available to help manage feral hog populations in order to reduce rangeland erosion, field crop destruction, mammal predation, and improve stream water quality.

Sponsored by:

Texas Cooperative Extension -
San Patricio, Bee, Live Oak, Jim Wells, Nueces, Aransas, and Refugio Counties

Co-Sponsors:

Welder Wildlife Refuge, Texas Parks & Wildlife, Texas Animal Health Commission,
and Wildlife Services

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability, or national origin.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.



FERAL HOG PROGRAM
Ben E Keith Meeting Room
2019 West Oak St., Palestine, Texas
Monday, March 26, 2007

Program start time 6:00 p.m.

AGENDA

5:30 p.m.Registration & Meal

Topics and Speakers

6:00 - 7:00 p.m.**Dr. Billy Higginbotham, Texas Cooperative Extension**
Feral Hog Background Biology and Life History

7:00 - 7:30 p.m.**Dr. A.B. Jennings, Texas Animal Health Commission**
Feral Hog Regulations and Disease Transmission

7:30 - 7:40 p.m.**David Raybin, Texas Parks and Wildlife**
Hunting Regulations Regarding Feral Hogs

7:40 - 8:10 p.m.**Terry Shriver, Texas Wildlife Management**
Control Techniques of Feral Hogs

8:10 - 8:30 p.m.Hog Buyer Discussion

2 hours CEU toward recertification
 1 hour Laws and Reg
 1 hour IPM

Texas Cooperative Extension participating counties:

- Anderson County Extension, Agent Truman Lamb**
- Cherokee County Extension, Agent Jack White**
- Freestone County Extension, Agent Shane McLellan**
- Henderson County Extension, Agent Rick Hirsch**
- Houston County Extension, Agent Eddie King**

Agriculture and Natural Resources • Family and Consumer Sciences • 4-H and Youth Development • Community Development

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability, or national origin.
 The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

A member of The Texas A&M University System and its statewide Agriculture Program

