Program participants' knowledge and perceptions of effectiveness of the French Quarter Formosan Termite Program

Alan L. Morgan
Louisiana State University and Agricultural and Mechanical College, amorga7@lsu.edu

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PROGRAM PARTICIPANTS’ KNOWLEDGE AND PERCEPTIONS OF EFFECTIVENESS OF THE FRENCH QUARTER FORMOSAN TERMITE PROGRAM

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College
In partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The School of Human Resource Education and Workforce Development

by

Alan L. Morgan
B.S., Louisiana State University, 1975
M.S., Louisiana State University, 1994
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# TABLE OF CONTENTS

ACKNOWLEDGEMENTS.......................................................................................... ii

LIST OF TABLES........................................................................................................ v

ABSTRACT.................................................................................................................. vii

CHAPTER 1  INTRODUCTION............................................................................. 1
   Rationale for the Study................................................................. .......................... 1
   Statement of the Problem................................................................. 4
   Purpose................................................................................................. 5
   Objectives.............................................................................................. 5
   Definition of Terms.............................................................................. 6

CHAPTER 2. REVIEW OF RELATED LITERATURE............................................. 8
   Evaluation and Program Assessment.................................................. 9
   Uses of Evaluations........................................................................... 11
   Perception......................................................................................... 17
   Termite Studies ............................................................................... 21

CHAPTER 3. METHODOLOGY........................................................................... 23
   Population and Sample........................................................................ 23
   Survey Instrument and Procedure................................................... 24
   Establishment of Face Validity.......................................................... 25
   Data Collection.................................................................................... 25
   Analysis of Data................................................................................... 28

CHAPTER 4. FINDINGS....................................................................................... 32
   Demographic Characteristics of Respondents................................. 32
      Gender and Age of the Respondents ........................................... 32
      Education Level of the Respondents .......................................... 33
      Classification of Property Owners/ Managers.............................. 33
      Primary Use of the Property......................................................... 34
      Years of Ownership and/ or Management of Property............... 35
   Objective 1....................................................................................... 36
   Objective 2....................................................................................... 41
   Objective 3....................................................................................... 45
   Objective 4....................................................................................... 49
   Objective 5....................................................................................... 51
   Objective 6....................................................................................... 51
LIST OF TABLES

Table 1. Response Rates by Wave .................................................................27

Table 2. Age of Participants of French Quarter Formosan Termite Program ..........32

Table 3. Level of Education Completed by Participants of French Quarter Formosan
Termite Program .........................................................................................33

Table 4. Classification of Property Owners ..................................................34

Table 5. Primary Use of Property in the French Quarter Formosan Termite
Program .........................................................................................................34

Table 6. Length of Ownership of Property by Participants in the French Quarter
Formosan Termite Program ........................................................................35

Table 7. Number of Years of Management Reported by Property Managers of
Property in the French Quarter Formosan Termite Program .........................36

Table 8. Participants’ Perceptions of Importance and Effectiveness of the French
Quarter Formosan Termite Program ..........................................................38

Table 9. Participants’ Perceptions of Satisfaction with the French Quarter Formosan
Termite Program ..........................................................................................39

Table 10. Analysis of Variance of Item One, “The Formosan Termite is a
Substantial Threat to Property Owners in the French Quarter” by
Owner/Manager Type ....................................................................................40

Table 11. Analysis of Variance of Item 11, “I Would be Willing to Pay Contract
Renewal Fees to Pest Control Operators to Maintain Yearly Termite
Protection on my Property” by Owner/Manager Type ....................................41

Table 12. French Quarter Formosan Termite Program Participants’ Knowledge
of the FST Management Program-Frequencies .............................................43

Table 13. French Quarter Formosan Termite Program Participants’ Knowledge of the
FST Management Program- Means and Standard Deviations ......................44

Table 14. Termite Management Knowledge Scores of Formosan Termite Program
Participants ....................................................................................................45

Table 15. General Termite Knowledge Scores of French Quarter Formosan Termite
Program Participants ....................................................................................46
Table 16. General Termite Knowledge Scores of French Quarter Formosan Termite Program Participants

Table 17. French Quarter Formosan Termite Program Participants’ Knowledge Level of Termite Biology, Identification, Prevention and Control Options

Table 18. Comparison of Management and General Termite Knowledge Scores of French Quarter Formosan Termite Program Participants and Non-Participants

Table 19. Perceptions of Participants of the French Quarter Formosan Termite Program with Regard to Future Continuation and Expansion of the Program

Table 20. Relationship Between Termite Management Scores and Formosan Termite Management Program Participants’ Perceptions of Future Continuation and Expansion of the Program

Table 21. Relationship Between General Termite Knowledge Scores and Formosan Termite Management Program Participants’ Perceptions of Future Continuation and Expansion of the Program
The purpose of this study was to determine program participants’ knowledge and perceptions of the effectiveness of the French Quarter Formosan Termite Program.

The management of the Formosan subterranean termite is critical to the economic well-being of not only Louisiana, but the U.S. Estimates of property damage, repairs, and control measures exceed $1 billion per year in the U.S., of which $500 million is in Louisiana and $300 million is in the New Orleans area.

In 1998, the LSU Agricultural Center, a statewide agricultural research and extension campus of Louisiana State University, in cooperation with the Agricultural Research Service, began a large area pilot test in New Orleans’ French Quarter. The goal of the program was to reduce densities of the Formosan termite and validate the effectiveness of area-wide management. Five years after the beginning of the program, data indicate that the Formosan termite population in this test area has been reduced by about 50%.

Another aspect of the program was a termite management education program designed to teach and inform property owners and managers, about the Formosan termite. The major objective of this part of the project was to provide and deliver information designed to educate the public on the biology and control of the Formosan termite.

The French Quarter program needed to be evaluated from the viewpoint of the participants of the study in order to assess their perceptions of the effectiveness of the program and to measure their knowledge of educational aspects of the program. All 225 property owners and managers in the original 15-block area of the French Quarter
Program were surveyed with a 70.7% response rate. Based on results of the study, it was concluded that the majority of the participants thought that the program was important, effective, and should be continued and expanded to other areas of the French Quarter. Knowledge scores derived from specific survey questions indicated that the participants were knowledgeable about termite biology, identification, prevention, control, and management. Continued funding for both further research and education directed towards the Formosan subterranean termite is warranted based on the results of the study.
CHAPTER 1

INTRODUCTION

Rationale for the Study

In many parts of the world, termites have been a major cause of building deterioration. Older neighborhoods are particularly susceptible to termite infestations due to old construction methods that did not include techniques designed to minimize termite infestations and damage. An example of this is the historic French Quarter in New Orleans, the oldest part of the city that dates back to its founding by the French in the 1700s.

In the United States (U.S.) and Canada, subterranean termites are the most widespread species of termites and account for the majority of the damage done to structures. Drywood and dampwood termites can also be found in the country, but are much less important economically than the subterranean species.

*Coptotermes formosanus* Shiraki (the Formosan termite) is a serious pest in several parts of the world and is one of the most destructive insects in Louisiana. It attacks both living trees and structural wood. The Formosan subterranean termite has the ability to establish a colony that does not have ground contact. This is unlike other native termites in the US. These nests, found in buildings and trees, require more extensive detection and control methods than the native termites. Formosan termite nests can be outwardly invisible for years.

The Formosan termite is native to Southeast Asia. It was introduced into several U.S. port cities in 1945, shortly after World War II, in post–war shipments of military equipment being returned to the U.S. from the Far East. Areas of the U.S. where the
initial introduction occurred include Hawaii, the major port cities of the gulf coast, including Houston, Galveston, New Orleans, and Mobile, and the Southeastern Atlantic coast.

These early introductions in the U.S. went unnoticed, while the termites increased colony size and began to spread. It was not until 1965 that the colonies were detected. Since then, *C. formosanus* has slowly expanded its geographic domain. At the present time, the largest single concentration of the pest in the U.S. is located in south Louisiana, with particularly heavy infestations in New Orleans and Lake Charles. Although these areas have the most severe infestations, 25 additional parishes in Louisiana are known to have infestations.

The management of the Formosan subterranean termite is critical to the economic well-being of not only Louisiana, but the US. Estimates of property damage, repairs, and control measures exceed $1 billion per year in the U.S., of which $500 million is in Louisiana and $300 million is in the New Orleans area. Losses include the collapse and demolition of structures and defaults on mortgages. State and local government is being forced to expend limited resources and funds to repair public and government buildings, leading to a greater drain on the state’s already shaky economy. The problem of managing termites is complex. Termite damage and costs associated with it impacts not only the homeowner, but also builders, real estate agents, bank and mortgage companies, insurance companies, state and local governments, architects, pest management companies, the nursery industry and landscapers.

In 1998, the U.S. Congress recognized that the Formosan subterranean termite potentially could economically devastate areas of the country and appropriated funds to
the United States Department of Agriculture to begin work on controlling and managing this pest. Since the epicenter of the problem was in New Orleans, the Southern Regional Research Center, a research facility of USDA’s Agricultural Research Service (ARS) in New Orleans, received the funds and became responsible for contracting with cooperating universities and agencies throughout the country in order to find new methods for controlling the pest. This initiative became known as “Operation Fullstop.”

Under Operation Fullstop, the LSU Agricultural Center, a statewide agricultural research and extension campus of Louisiana State University, in cooperation with the Agricultural Research Service, began a large area pilot test in the New Orleans French Quarter. The program, which began in the summer of 1998, was designed to demonstrate the effectiveness of area-wide management of pests like the Formosan subterranean termite. The agreement between and specific responsibilities of the two agencies with regard to this program are contained in Appendix A.

Under this program, all 323 properties in a contiguous 15-block area in the French Quarter were treated by pest control companies. A map of this area is contained in Appendix B. Treatments included commercially available baits or non-repellent liquid termiticides. In 2002, the program was expanded to cover an additional 15-block area adjacent to the original 15 blocks.

The goal of the program was to reduce densities of the Formosan termite and validate the effectiveness of area-wide management. Five years after the beginning of the program, data indicate that the Formosan termite population in this test area has been reduced by about 50%.
A second part of the French Quarter termite program was a termite management education program designed to teach and inform property owners, property managers, and pest control operators of actions that can be taken to control the Formosan subterranean termite. The major objective of this part of the project was to provide and deliver information designed to educate the public on the biology and control of the Formosan termite. Educational information was released through mass media, public citizens meetings, newsletters, websites and other outreach programs. Educational materials in the form of printed brochures, fact sheets and videotapes were developed. Slide and powerpoint programs designed to educate the public on termite management were also developed and delivered at various meeting and training opportunities. Topics covered included identification of termites and wood destroying organisms, differences between ants and termites, differences among termites found in Louisiana, biology and ecology of termites, damage potential of termites, prevention and management of termites, laws and regulations dealing with termite management, building and construction materials, design of structures, and historical perspective of the Formosan subterranean termite. Prevention and management included practices for preventing termite infestations, sources of water, soil treatment, baits, barriers, borates, wood treatments, use of mulches, detection of termites, and other management options.

Statement of the Problem

Four years after the beginning of the program, data indicated that the population of the Formosan termite in the original 15-block area of the French Quarter program was being reduced, indicating to LSU Agricultural Center and ARS personnel that the program was working. It became evident, however, that the French Quarter program
needed to be evaluated from the viewpoint of the participants of the study in order to assess their perceptions of the effectiveness of the program and to measure their knowledge of educational aspects of the program.

Public evaluation is a part of USDA and LSU Ag Center programs and the results from an evaluation by the participants could help redirect the program if problems with the program were indicated. A positive evaluation by the participants of this program would also justify the expansion of the program to other areas of the French Quarter.

Purpose

The purpose of this study was to determine the program participants’ knowledge and perceptions of the effectiveness of the French Quarter Formosan Termite Program.

Objectives

The specific objectives that guided the study were:

1. To assess the perceptions of participants in the French Quarter Formosan Termite Program with respect to the importance and effectiveness of the program, and to compare these perceptions among the different types of property owners and managers in the study.

2. To determine the knowledge level of the participants of the French Quarter Formosan Termite Program with respect to their knowledge of the FST management program.

3. To determine the knowledge level of participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology, identification, and prevention, and the control options that are available.
4. To compare participants of the French Quarter Formosan Termite Program with a group of non-participants with respect to their knowledge of termite biology, identification, and prevention, and their knowledge of termite management in order to determine if a difference exists in the knowledge scores of the two groups and to assess the effectiveness of educational efforts directed at program participants.

5. To compare perceptions among the four types of property owners in the French Quarter Formosan Termite Program, with respect to the effectiveness and future of the French Quarter project.

6. To determine perceptions of participants in the French Quarter Formosan Termite Program with respect to continuation and expansion of the project.

Definition of Terms

The Definition of Terms below is intended to aid the reader in understanding the nature and conduct of this research.

ARS. Agricultural Research Service, one of the branches of the United States Department of Agriculture.

FST. Formosan Subterranean Termite

*Coptotermes formosanus*. The Formosan subterranean termite.

Operation Fullstop. The federal USDA/ARS program responsible for basic and applied research directed at control and management of the Formosan subterranean termite.

Southern Regional Research Center. One of four national research centers of the United States Department of Agriculture/Agriculture Research Service, located in New Orleans, Louisiana.
**Property Owners.** Owners who own and reside at property in the test area of the French Quarter, owners who own, live at and lease out a portion of the property in the test area of the French Quarter, owners who own, do not live at, but lease out all of the property in the test area of the French Quarter to others, as indicated on the tax roles from the tax assessor’s office of Orleans parish.

**Property managers.** Individuals who manage, are responsible for, make decisions about, and take care of property in the test area of the French Quarter for the owners.

**Termite.** Pale colored, soft bodied social insects (order Isoptera) that live in colonies, feed on wood, and include some which are very destructive to wooden structures and trees.

**LSU Agricultural Center.** A statewide agricultural research and extension campus of Louisiana State University.

**French Quarter.** The oldest historical area of New Orleans (Vieux Carre) located on the Mississippi River and bounded by Canal Street, Rampart, and Esplanade Avenue.

**French Quarter Program.** A 15-block-wide area demonstration in New Orleans’ French Quarter whose goal is to manage the Formosan termite; a cooperative effort of the LSU AgCenter and the Agricultural Research Service (Border streets are Conti, Decatur, Bourbon and Dumaine).
CHAPTER 2
REVIEW OF RELATED LITERATURE

The French Quarter Formosan Termite Program is one part of the National Formosan Subterranean Termite (FST) management program (Operation Fullstop) and is a cooperative program between the Louisiana State University Agricultural Center, the USDA’s Agricultural Research Service, and the New Orleans Mosquito and Termite Control Board. The U.S. Congress funds the project on an annual basis. In November of 2001, USDA requested that a survey be conducted of residents who participated in the program in order to assess the impact the area-wide program has had on the community and to assess the effectiveness of the program as viewed by the participants.

The review of related literature examines general theories, issues and cases in program evaluation and program assessment, while exploring assessment efforts of certain publicly funded programs. Evaluation and assessment of worldwide U.S. government funded programs and state funded local extension programs with some similarity to the Formosan Subterranean Termite Management program in Louisiana are also examined. Since the survey and topic of this dissertation involves program participants’ perceptions of the program, the topic of perception is also explored.

Journal articles on the topic of evaluation and assessment of public programs were scanned for applicability. Because several major government pest control programs were conducted 30 years ago, articles, books and studies dating back to the early 1970s were examined.
Evaluation and Program Assessment

Scriven defines evaluation as the process of determining the merit, worth and value of things, and evaluations as the products of that process. Scriven says that evaluation is one of the most powerful and versatile of the “transdisciplines”- tool disciplines such as logic, statistics and design- that apply across broad ranges of the human and investigative and creative effort while maintaining the autonomy of a discipline in its own right (Scriven, 1991).

In examining the history of program evaluation, Stufflebeam notes that program evaluation has a history that goes back some 180 years, even though many people mistakenly view it as a rather recent phenomenon and date its beginning from the 1960s when the federal government began the infusion of large sums of money into a wide range of human service programs, including education (Stufflebeam, Madaus, and Kellaghan, 2000).

Stufflebeam describes “seven periods” in the life of program evaluation, which include the age of reform (1792-1900), the age of efficiency and testing (1900-1930), the Tylerian age (1930-1945), the age of innocence (1946-1957), the age of development (1958-1972), the age of professionalism (1973-1983), and the age of expansion and integration (1983-2000) (Stufflebeam et al., 2000).

Guba and Lincoln describe the evolution of the evaluation process as four “generations”; the first generation being measurement, the second generation called description (which targeted students in the early 1900s as the target of evaluations), the third generation called “judgment,” born in the post-Sputnik period, and, finally, fourth generation evaluation, which they describe as a form of evaluation in which the claims,
concerns, and issues of stakeholders serve as the basis for determining what information is needed (Guba and Lincoln, 1989).

Scriven points out that evaluation is a new discipline but an ancient practice. The early craft workers (stone chippers) left indications of an evaluation process by the gradual improvement of their materials and designs over a period of time. The practice of personnel and program evaluation goes back to the dynasties of Chinese and Egyptian empires, and is the backbone of physical disciplines from t’ai chi to shooting, dancing, or diving (Scriven, 1991).

Today, there are many models or approaches to evaluation. Stufflebeam lists 22 different approaches or models that emerged in the U.S. between 1960 and 1999. These approaches were: 1) Public relations-inspired studies, 2) Politically-controlled studies, 3) Objectives-based studies, 4) Accountability, particularly payment by result studies, 5) Objective testing programs, 6) Outcome evaluation as value-added assessment, 7) Performance testing, 8) Experimental studies, 9) Management information studies, 10) Benefit-cost analysis approach, 11) Clarification hearing, 12) Case study evaluations, 13) Criticism and connoisseurship, 14) Program theory-based evaluation, 15) Mixed methods studies, 16) Improvement, accountability-oriented evaluations, 17) Consumer-oriented studies, 18) Accreditation/certification approach, 19) Client-centered studies, 20) Constructivist evaluation as per Guba and Lincoln, 21) Deliberative democratic evaluation, and 22) Utilization-focused evaluation (Stufflebeam et al., 2000).

The utilization-focused approach is geared to ensure that program evaluations make an impact. It is a process for making choices about an evaluation study in collaboration with a targeted group of priority users, selected from a broader set of
stakeholders, in order to focus correctly and effectively on their intended uses of the
evaluation (Patton, 1978).

Uses of Evaluations

There are many reasons to have a program evaluated. Ideally, one is seeking
answers to questions about the program’s future: Should it be continued? Should it be expanded? Should changes be made in its operation?

Weiss suggests that there are occasions when administrators turn to evaluations
for less legitimate reasons including: 1) Postponement, or ways to delay a decision, 2) To
duck a responsibility, 3) Public relations, where evaluation is seen as a way of self-
glorification and a way to make a program look successful and visible, 4) To fulfill grant
requirements (Weiss, 1972).

Evaluations are the result of a press for accountability under the threat of
reductions in government funding for all programs, as well as the increased desire of
professionals to demonstrate the usefulness of services they perform.

In reviewing the literature, there are many examples of assessments of
government sponsored programs and suggested guidelines for conducting evaluations of
these programs.

Many USAID (U.S. Agency for International Development) programs are being
evaluated by a method called participatory evaluation. Characteristics of participatory
evaluation are outlined in one of the agency’s public bulletins. Participatory evaluation
provides for active involvement in the evaluation process of those with a stake in the
program: providers, partners, customers, and any other interested parties. Participation
takes place throughout all phases of the evaluation-planning and designing, gathering and
analyzing the data, and making conclusions and recommendations (USAID Center for Development Information and Evaluation #1, 1996).

Another report from the USAID Center for Development of Information and Evaluation offers tips for conducting customer service assessments. A customer service assessment is a management tool for understanding USAID’s programs from the customer’s perspective. Under USAID’s new operations system, agency operating units are required to routinely and systematically assess customer needs for, perceptions of, and reactions to USAID programs. Most often, these assessments seek feedback from customers about a program’s service delivery performance. Customer service assessments may also be used to elicit opinions from customers or potential customers about USAID’s strategic plans, objectives, or other planning issues.

Customer service assessments are federally mandated. The Government Performance and Results Act of 1993 and Executive Order 12862 of 1993 direct federal agencies to reorient their programs towards achievement of measurable results that reflect customer’s needs and to systematically assess those needs (USAID Center for Development Information and Evaluation # 9, 1996).

One example of a major program of USAID is the Cuba Program. This program originated in 1995. The goal of the program is to increase the free flow of accurate information on democracy and human rights to, from, and within Cuba. In 2000 an evaluation of the Cuba Program was conducted in order to make recommendations as to the future of the program (USAID Cuba Program, 2000). The findings of the program were published and are available at the USAID website.
Of all government programs, the United States Department of Agriculture has conducted, evaluated and assessed a great many of these programs. Major national pest management programs conducted by the USDA in the past years include the Med Fly program and the screwworm eradication program in Texas.

The infestation and spread of the Mediterranean fruit fly in California and Florida during the early 1980s posed what was perceived to be a major economic threat to the state’s agriculture, while at the same time leading to intergovernmental eradication efforts that were taken to entail substantial health and environmental risks. In 1998 and 1999, Florida’s agricultural community was forced to focus time and resources communicating to the general public about the Mediterranean fruit fly and the control methods used to eradicate the pest when the fly threatened the state’s $6.8 million agricultural industry. This is one example of a survey that was conducted in order to assess citizens’ perceptions of a major government program (Dufresne and Telg, 2000).

Another program in Canada that was the subject of a published assessment was the Gypsy moth ground spray program in 1998 (Capital Health Region, 2000).

Two other controversial public perception surveys that were conducted by USDA concern GMOs (genetically modified organisms), and consumer acceptance of irradiated meat and poultry products.

The Federal Government began allowing food manufacturers to irradiate raw meat and meat products to control pathogenic microorganisms in February 2000. Consumer acceptance of irradiated foods could affect public health because many food borne illnesses occur when consumers handle or eat meat or poultry contaminated by microbial pathogens. Food manufacturers have been slow to adopt irradiation, partly due
to the perception that very few consumers are willing to buy irradiated foods. A recent survey by the Food-borne Diseases Active Surveillance Network confirmed this perception. Only half of the adult residents were willing to buy irradiated meats and only a fourth was willing to pay a premium for those products. These findings suggest that the impact of food irradiation on public health will be limited unless consumer preferences change (Frenzen, Majchrowicz, Buzby and Imhoff, 2000).

Another agricultural issue evaluated by a USDA survey concerns the use of crop biotechnology products, such as genetically engineered (GE) crops. A report by USDA examined (1) Extent of adoption of bioengineered crops, their diffusion path, and expected adoption rates over the next few years, (2) Factors affecting the adoption of bioengineered crops, and (3) Farm-level impacts of the adoption of bioengineered crops. Data that were used in the analysis are mostly from USDA surveys (Fernandez-Cornejo and McBride, 2002).

In another USDA consumer survey, consumers expressed their preferences for bioengineered crops at the market. Factors influencing consumer preferences included: (1) Their perceptions of benefits and risks of bioengineered crops on human health and the environment, (2) Their ethical stance toward genetic engineering and (3) Their trust in government regulations concerning risk assessment and management (Fernandez-Cornejo and McBride, 2002).

Another example of a survey conducted by USDA/ Economic Research Service, is one that noted differences in objections to GMOs among EU, Australian, Japanese and U.S. consumers. Results of the survey indicated that U.S. consumers have little objection to genetically modified foods, while EU consumers expressed great disapproval.
Attitudes of consumers in Japan and Australia in the mid-1990s were generally favorable toward biotech crops, although Australian consumers generally regarded biotech crops as risky. Surveys that asked the same question of both EU and U.S. consumers elicited less favorable responses toward genetic engineering in food from EU consumers than from U.S. consumers. The results of surveys such as this will play a major role in determining global agriculture and marketing policies. Consumer preferences and the design of policies to reflect those preferences could affect trade in three areas: approval regulations, labeling, and consumer demand for products (Economic Research Service/USDA, 2000).

Yet another study measured the effects of food-safety perceptions on food demand and global trade. The results of this study indicated that consumer concerns about food safety risks vary across countries and change over time. This survey measured consumers’ knowledge and perceptions about risk-reducing technologies and is another example of the importance of surveys and assessments of programs and public perceptions of them (Buzby, 2001).

In examining other literature concerning evaluation of public government programs, it was found that the U.S. Forestry Service and the Soil Conservation Service have conducted several evaluation assessments of adoption of conservation and ecosystem management programs. One study measured the sociological aspects of the adoption of conservation practices by U.S. farmers. An understanding of these sociological factors is helpful in developing future successful programs for soil and water conservation in the country (Clearfield and Osgood, 1986).

One more example of an assessment of a public program is a USDA- Natural Resources Conservation Service survey that assessed conservation programs by
measuring the perceptions of issues awareness, and adoption rates of conservation practices by participants (USDA/Natural Resources Conservation Service, 2000).

Cooperative Extension, like many public agencies, has seen an increased emphasis on measuring quality of programs through customer satisfaction surveys. Customer satisfaction provides for better understanding of services provided by Extension from the customer’s perspective. In addition, it provides for better understanding of expectations of customers and the extent to which an organization is satisfying the needs and wants of its customers (Biggs, Gordon and Zimmerman, 1995).

Israel (1998) suggested that customer satisfaction surveys provide several benefits for Extension. Among these benefits are: 1. They tell us what differences our programs are making in the communities, 2. They serve as a mechanism to show our supporters and critics that our customers have a high level of satisfaction and they are using Extension information, 3. They help identify strengths and weaknesses of Extension programs so that improvements can be made, and 4. They help to showcase programs in the annual report of accomplishment.

Berrio and Henderson (1998) suggested that Extension organizations should conduct customer satisfaction surveys as an effort to assess the performance of the services from the customer perspective.

There are many examples of studies and evaluations of Extension programs. In 1999, the University of Florida assessed the effectiveness of their Master Gardener Mentor program. In this study, surveys were conducted to evaluate the effectiveness of the mentor program from the perspective of the mentors as well as the trainees (Phillips and Bradshaw, 1999).
In 1999, Rutgers University conducted surveys that evaluated a state-sponsored agricultural marketing program called “The Jersey Fresh Program,” a marketing program that promotes locally grown fresh produce in order to increase the profitability of New Jersey farms. The purpose of the study was to evaluate consumer awareness and response to the Jersey Fresh Program. The findings of the study may be transferable to other states interested in developing agricultural marketing programs (Govindasamy, Italia and Thatch, 1999).

In reviewing the literature for evaluations that have been done to assess termite management programs and educational efforts, a 1999 case survey is noted that was conducted by Potter and Bessin, extension entomologists with the University of Kentucky. This survey, which dealt with termites and the public’s attitudes and perceptions of the management program, revealed that homeowners have many preconceived ideas and anxieties about termites and the practices of pest control operators (Potter and Bessin, 2000).

Perception

Mowan defines perception as a process through which individuals are exposed to information, attend to the information, and comprehend the information. In the exposure stage of the process, consumers receive information through their senses. In the attention stage, they allocate processing capacity to a stimulus. In the comprehension stage, they interpret the information to obtain meaning from it. Comprehension involves the process of making sense of stimuli so that they can be understood. It is also important to understand that different people may assign divergent meanings to exactly the same stimulus because its perception is influenced by their expectations and by their general
background. One cannot assume that because two people receive exactly the same stimulus, as in a message, they will perceive it and react to it in a similar manner (Mowan, 1995).

Several studies have indicated that perception is affected by knowledge level. Studies on perceptions of pesticide use have suggested that Extension should shift pesticide education programs from a disciplinary program to one that encompasses broader contemporary pesticide issues including public health issues, habitat degradation issues, and pesticide laws (Whitford, 1993).

Whitford also notes that with regard to public perception of pesticide use, there is a problem with exactly what facts are given to the public. Many times scientists interpret data differently and give very different information and viewpoints to the public. Because of this, the public is left to draw their own conclusion about risks and benefits, based on their own perception and knowledge of the facts.

Many studies have been done on risk perception, with regard to various environmental issues and/or government-sponsored programs, such as pesticide residues in food products, genetically modified organisms, and other programs concerning the use of agrichemicals. Public perception of the risks and benefits of agrichemicals can influence government and business decisions with regard to their use and development. Perceptions of risks from residues of agrichemicals differ greatly among members of the public. In a study of public perceptions, the Council for Agricultural Science and Technology reported about one-fourth perceived a high chance of harm from pesticide residues in food whereas about the same proportions perceived very little or no chance of harm. The differences observed imply that there are very different information needs and
policy preferences among different segments of the public (Council for Agricultural Science and Technology Summary, 1995).

Social scientists also have indicated that positive and negative perceptions are formed based on one’s own experiences. For example, farmers are more inclined to have a positive attitude about pesticides because they are more knowledgeable about the risk and because they are familiar with the benefits of preventing the destruction of their crops from pests. However, the non-agricultural population might be more apt to have negative perceptions of the potential risks of pesticides because they do not understand or might be doubtful of the value of pesticides in the agricultural system. They may also be concerned about unknown health problems that could be related to pesticide use (Whitford, 1993).

An implication of these findings for the Extension Service would be that an agent or specialist who realizes the role of perception and the importance of facts would be more successful in pesticide educational activities.

Other studies have determined that perception may be influenced by certain demographic factors such as age, socio-economic status, educational level, and gender.

A study by Dunlap and Beus (1992) looked at public perceptions and attitudes towards pesticides to see if these perceptions could be predicted by demographic characteristics. The findings of this particular study indicated differences in perceptions by gender, age, and level of education. While men and women exhibited about the same amount of trust in the food system, women had significantly more concern about pesticide safety issues. Younger adults with higher levels of education were found to be somewhat more tolerant to pesticide use than their counterparts, and individuals with
higher levels of education were found to have lower levels of concern over pesticide usage.

In another study, race, age, and income were found to influence consumer perceptions and preferences of various beef cuts (Hernandez, 1982).

In a study of young adults’ perceptions and attitudes about animal research, gender was found to be significant in respondents’ opposition to animal research. Feminist attitudes, 10th grade science achievement, adult scientific literacy, partisan affiliation, and several early home influences each explained part, but not all, of the gender difference in attitudes about scientific research (Travis and Treanor, 2001).

A report issued by the National Science Foundation on U.S. consumer attitudes suggests that a relationship exists between a person’s level of education and his or her assessment of the benefits and risks of genetic engineering and genetically modified organisms. People without college degrees had more positive attitudes and there was increasing concern with increasing education level. This implies that as knowledge increases, consumers ask more critical questions about technology and deliberate more on benefits and risks (Kamaldeen and Powell, 2000).

The role that demographics can play in perceptions of various issues and programs is illustrated in another study that examined the perceptions and attitudes of adults over age 18 concerning use of animals for scientific testing. This study revealed that most adults showed support for animal testing, but there were sharp differences of opinion between generations, between men and women, and between voters and non-voters (Travis and Treanor, 2001).
Termite Studies

Studies involving termite control are increasing. The economic damage caused by several species is forcing government and industry to allocate funding for termite studies, research, and education. Based on sales figures for liquid termiticides, the control cost alone in the United States might exceed 1.5 billion dollars annually and the typical homeowner may pay five times more than the control cost to repair structural damage (Abe, Bignell and Higashi, 2000). With the Environmental Protection Agency having banned and removed from the market many of the chemicals widely used in the past and watching many others closely, research and studies targeting new methods and techniques for controlling termites will become more critical. As the general public is exposed to these new chemicals and control methods, evaluation and perception studies will become increasingly important. Education of pest control operators and the public will also become even more important than in the past, to ensure that whatever changes are made lead to the successful control of termites (Edwards and Mill, 1986).

As urbanization and travel between different parts of the world increases, training and guidelines on identification of the termite will need to be increased. The emphasis on the control of termites in the next few years will no longer be on a single chemical or method. An integrated method of control will be adopted where the emphasis will be on several methods. The public will need to become involved. “Different methods will be used together or separately to provide a safer more effective method for termite control” (Pearce, 1997 p. 121). This integrated method of termite control will involve the homeowner becoming involved and doing whatever is possible to eliminate conditions
that are conducive for infestations. New treatment methods and strategies will be devised and public acceptance of these new methods will need to be evaluated and assessed.

Evaluation and assessment of program participants’ perceptions of effectiveness of public programs will serve only to strengthen these programs in any future extension or expansion efforts and will help to justify funding for the programs.
CHAPTER 3

METHODOLOGY

A descriptive research study was conducted to assess program participants’ knowledge and perceptions of effectiveness of the French Quarter Formosan Termite Program.

The survey instrument developed for this study is contained in Appendix C. Survey methodology outlined by Dillman (2000) was followed.

Research conducted at LSU involving human subjects requires the approval of the Institutional Review Board. An application for approval was made to the IRB on 6/16/03 and it was approved on 6/26/03. The IRB reference number for this research study is #2366.

Population and Sample

All 225 property owners or property managers who own or manage the properties involved in the original 15-block area of the French Quarter program of Operation Fullstop were surveyed.

The property owner’s or property manager’s name and mailing address was obtained from the individual agreements signed with the LSU Agricultural Center and the property owner/manager at the beginning of the program. These names and corresponding addresses were checked for accuracy against records obtained from the Orleans Parish tax assessor’s office. In addition, corrections were made during the course of the study with regard to change of ownership of these properties.
Survey Instrument and Procedure

Appendix C contains the mailed questionnaire that was used in the study. The investigator-constructed questionnaire included questions that were developed to accomplish the six objectives of the study. General and specific questions on knowledge, effectiveness, satisfaction, perception, and demographics were included to determine the participants’ perceptions of the French Quarter Program. A few items from a parallel termite economic survey were also included in the instrument (Dunn, Bhandari, Paudel, Guidry and Vlosky, 2003).

The response scale of the instrument designed for the study included closed-ended, unordered choice questions, Likert-type scale items, anchored scale items, and rating type questions.

Closed-ended unordered questions were used to let respondents indicate their response choices for knowledge questions.

Likert-type scale questions were used to determine knowledge, perceptions, and beliefs of property owners and managers with regard to the Formosan subterranean termite problem in the French Quarter.

Anchored scale items were included in the survey to determine the property owners’/managers’ perceptions of the degree of importance of conditions that are conducive to Formosan termite infestations, their level of satisfaction with pest control operator services performed in conjunction with the French Quarter project, and their satisfaction levels with the French Quarter project in general.

Demographic questions were included in the survey to develop a profile of the participants in the French Quarter Program and to determine differences in perceptions of
property owners who reside at their property, owners who do not reside at their property but rent it to others, owners who reside at their property and rent out a portion of the property to others, and property managers who manage the property in the study for the owners.

Establishment of Face Validity

The face validity of the instrument was objectively determined and assessed by the judgment of peer researchers and ARS personnel. The criterion validity or content validity of the survey was determined with the help of fellow researchers and the Agricultural Research Service, the organization that requested the survey, to ensure that the technical content covered in the survey was complete and accurate.

Data Collection

To accomplish the objectives of the study, the survey was distributed to participants via U.S. mail. Mailed surveys were used due to time constraints and economic feasibility. Inaccessible private property owners were also more easily reached by the U.S. mail. A cover letter that introduced the property owners to the objectives of the study accompanied the questionnaire. Instructions on completing and returning the survey were included in both the cover letter and on the questionnaire. Return postage and an envelope with complete return mailing address were included.

In order to obtain the maximum percentage of questionnaire returns, the following follow-up techniques were used:

1. If the questionnaire was not returned within 7-10 days after the initial mailing, a post card was sent to the first mailing non-respondents as a friendly reminder. An
offer was also made to send out another questionnaire to the participant if one was needed (see Appendix E).

2. A second follow-up packet was sent to second-mailing non-respondents about three weeks after the original mailing. Included in this packet was a second letter emphasizing the importance of responding to the questionnaire and a return-addressed postage-paid envelope (see Appendix F).

3. A final follow-up was sent to third mailing non-respondents about six-seven weeks after the mailing of the original questionnaire. This mailing also included a letter emphasizing the importance of responding to the survey and another replacement survey and return envelope (see Appendix G).

It was decided that any survey returned after September 12, 2003 would not be included in the data analysis.

After completion of the survey, in order to determine any differences between the respondents and any non-respondents, a random sample of 25 non-respondents was selected for a telephone survey. The telephone interview consisted of 10 randomly selected items from the original survey. The data from these telephone interviews were then statistically compared with the data from the respondents to determine if differences occurred.

Prior to the telephone follow-up, there was a response rate of 70.66% and a total of 66 non-respondents. Attempts were made to contact 60 of these non-respondents with 25 being successfully contacted. A comparison was made to determine if non-respondents were statistically significantly different from respondents. The decision was made a priori that if statistically significant differences were found in fewer than two
scale items, it would be concluded that the data from the telephone follow-up of the 25 non-respondents was representative of the population of program participants.

Statistically significant differences were not found in any of the ten items. Therefore, it was concluded that no statistically significant differences existed between the respondents of the study and the non-respondents.

The final response rate was 159 out of 225 or 70.66%. The responses by response wave are presented in Table 1.

Table 1.

<table>
<thead>
<tr>
<th>Wave</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>First mailing</td>
<td>83</td>
<td>52.2</td>
</tr>
<tr>
<td>Second mailing</td>
<td>39</td>
<td>24.5</td>
</tr>
<tr>
<td>Final mailing</td>
<td>37</td>
<td>23.3</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>100</td>
</tr>
</tbody>
</table>

A group of 150 New Orleans residents who work at the Southern Research Center in New Orleans and who were not participants in the French Quarter Formosan Termite program were asked to respond to the management and general knowledge portion of the survey (Section 2, questions 12-18, and Section 4, questions 23-34). They were also asked to respond to the demographic questions on the survey (Section 6, questions 42-47). Completed surveys were returned from 60 residents of this group (40.0%). This group was surveyed in order to determine the effectiveness of the educational programs of the study.
Analysis of Data

Each study objective was evaluated through the data analysis procedures which are outlined below:

1) The first objective of the study was to determine perceptions of participants in the French Quarter Formosan Termite Program with regard to the importance and effectiveness of and satisfaction with the program, and to compare the perceptions of different types of property owners/ managers. Items 1, 2, 6, 7 and 11 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale. Items 19, 20, 21 and 22 in Section 3 of the survey consisted of statements on which respondents expressed their degree of satisfaction on a 4-point Likert type scale. Frequencies, means, and standard deviations were calculated. Overall results for all respondents were reported as well as the results by type of property owner/ manager. Analysis of variance procedure was used to compare perceptions by type of property owner/ manager, i.e., owners who reside at their property, owners who reside at their property and rent out a portion, owners who do not reside at their property but lease it to others, and property managers who manage the property for the owners.

2) The second objective of the study was to determine the knowledge level of participants of the French Quarter Formosan Termite Program with regard to their knowledge of the FST management program. Items 12-18 in Section 2 of the survey consisted of seven conditions that are conducive to termite
infestations to which respondents indicated their agreement of the importance of each item on a 4-point Likert type scale. Frequencies, means, and standard deviations were calculated. A knowledge score was calculated for respondents based on the number of correct responses to items.

3) The third objective of the study was to determine the knowledge level of participants of the French Quarter Formosan Termite Program with regard to their knowledge of termite biology, identification, prevention and the control options. Respondents were asked to respond to questions 23-34 in Section 4 of the survey, which consisted of closed-ended and true or false questions concerning general termite biology, identification, and control. Frequencies, means and standard deviations were calculated. Overall responses for all respondents were reported. A knowledge score based on the number of questions answered correctly was calculated for each respondent.

4) The fourth objective of the study was to compare participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology, identification, and prevention, and their knowledge of termite management with the knowledge level of a group of non-participants with regard to the same items. Items 12-18 in Section 2 of the survey consisted of a list of seven conditions conducive to termite infestations and important in termite management. The respondents were asked to indicate their agreement with the importance of each item on a 4-point Likert type scale. Respondents were also asked to respond to questions 23-34 in Section 4 of the survey, which consisted of questions measuring general termite knowledge.
Knowledge scores based on the number of correct answers were calculated for the respondents. The t-test procedure was used to compare knowledge scores of the participants and non-participants.

5) The fifth objective of the study was to compare perceptions of program importance and effectiveness and the future of the program among the four types of property owners/managers in the French Quarter Formosan Termite Program. Items 2, 6 7, 8, 9 and 10 in Section 1 of the survey consisted of statements on which respondents expressed their degree of satisfaction on a 4-point Likert type scale. Frequencies, means, and standard deviations were calculated. Analysis of variance procedure was used to compare perceptions by type of property owner/manager, i.e., owners who reside at their property, owners who reside at their property and lease out a portion, owners who do not reside at their property but lease it to others, and property managers who manage the property for the owners.

6) The sixth objective of the study was to determine perceptions of participants of the French Quarter Formosan Termite Program with regard to future continuation and expansion of the program and to see if a relationship existed between knowledge level of participants and perceptions of future continuation and expansion of the program. Items 8, 9, and 10 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale. Means and standard deviations were calculated and overall responses were reported. A Pearson Product Moment correlation coefficient was calculated to determine if a relationship
existed between the knowledge scores of participants and their perceptions of the continuation and future of the program.
CHAPTER 4

FINDINGS

The primary purpose of the study was to determine the program participants’ knowledge and perceptions of the effectiveness of the French Quarter Formosan Termite Program. A total of 225 property owners and property managers with properties enrolled in the termite management program were surveyed via U.S. mail. The overall response rate for the study was 70.66% (n=159).

In this chapter the results of the study are arranged by the objectives of the study. Before presenting these results, some demographic characteristics of the respondents are identified.

Demographic Characteristics of Respondents

Gender and Age of the Respondents

The majority of the respondents of the study were male (n=117, 73.6%). A large majority indicated that they were 50 or more years old (n=117, 73.6%). Only a very small percentage of the property owners and managers were under the age of 35 (n=7, 4.4%). Table 2 provides a summary of the age distribution of the participants.

Table 2

Age of Participants of French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or equal to 24</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25-34</td>
<td>7</td>
<td>4.4</td>
</tr>
<tr>
<td>35-49</td>
<td>35</td>
<td>22.0</td>
</tr>
<tr>
<td>50-59</td>
<td>56</td>
<td>35.2</td>
</tr>
<tr>
<td>More than or equal to 60</td>
<td>61</td>
<td>38.4</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>100.0</td>
</tr>
</tbody>
</table>
**Education Level of the Respondents**

When asked to indicate their level of education, 35.8% (n=57) of the respondents indicated that they held a bachelor’s degree and 34.0% had at least some college (n=54). Only 2.5% (n=4) indicated that they did not have a high school diploma (see Table 3).

**Table 3**

<table>
<thead>
<tr>
<th>Level of Education Completed by Participants of French Quarter Formosan Termite Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>High School</td>
</tr>
<tr>
<td>High School Diploma</td>
</tr>
<tr>
<td>Some College</td>
</tr>
<tr>
<td>Associate degree (2 year degree)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
</tr>
<tr>
<td>Master’s degree</td>
</tr>
<tr>
<td>Doctoral degree</td>
</tr>
<tr>
<td>Professional degree (MD, DVM, JD, DD)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

**Classification of Property Owners/ Managers**

When respondents were asked to respond to questions regarding their domicile status with respect to the properties in the study, 44% (n = 70) indicated that they owned and resided at the property in the study. However, in this group there were 23 property owners (14.5%) who also leased out a portion of the property at which they reside. Forty-eight respondents, (30.2%), said that they leased out all of the property in the study and resided elsewhere. Nearly one-fourth of the respondents (25.8%, n = 41) indicated that they managed the property for the owners. The responses of these property owners and managers are summarized in Table 4.
Table 4
Classification of Property Owners

<table>
<thead>
<tr>
<th>Classification of property owner</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own, do not reside at, but lease out all of the property in the study</td>
<td>48</td>
<td>30.2</td>
</tr>
<tr>
<td>Own and reside at property in the study</td>
<td>47</td>
<td>29.5</td>
</tr>
<tr>
<td>Manage this property for others</td>
<td>41</td>
<td>25.8</td>
</tr>
<tr>
<td>Own, reside at and lease out a portion of the property in the study</td>
<td>23</td>
<td>14.5</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Primary Use of Property

When respondents were asked to indicate the primary use of the property in the study, it was found that the majority of the properties in the study (68.5%, n = 109), were used either completely or partially for residential purposes. Thirty-two respondents (20.2%) reported their property was used for business and 18 (11.3%) said the property was being used for commercial purposes. None of the respondents reported that the property was being used for government purposes. Table 5 summarizes responses of property owners and managers concerning the primary use of the property.

Table 5
Primary Use of Property in the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Use of Property</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>45</td>
<td>28.3</td>
</tr>
<tr>
<td>Both residential and commercial</td>
<td>43</td>
<td>27.0</td>
</tr>
<tr>
<td>Both residential and business</td>
<td>21</td>
<td>13.2</td>
</tr>
<tr>
<td>Commercial (office/professional)</td>
<td>18</td>
<td>11.3</td>
</tr>
<tr>
<td>Business (retail)</td>
<td>32</td>
<td>20.2</td>
</tr>
<tr>
<td>Government</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Years of Ownership and/or Management of Property

Owners of property enrolled in the French Quarter Formosan Termite Program indicated that they had owned the property for an average of 25.75 years (SD= 23.21). This mean may be inflated due to responses from six of the respondents indicating the unusually long time that the property had been owned by their families, ranging from 85-106 years. Of the 118 respondents who indicated that they owned the property in the study, only 6.7% (n=8) indicated that they had owned the property for less than five years. The majority of the owners (69.4%) said that they owned the property for more than 10 years (see Table 6).

Table 6
Length of Ownership of Property by Participants in the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Years owned</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td>5-10</td>
<td>28</td>
<td>23.9</td>
</tr>
<tr>
<td>11-20</td>
<td>30</td>
<td>25.7</td>
</tr>
<tr>
<td>21-30</td>
<td>21</td>
<td>17.8</td>
</tr>
<tr>
<td>31-50</td>
<td>17</td>
<td>14.3</td>
</tr>
<tr>
<td>More than 50</td>
<td>14</td>
<td>11.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>118</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*Note.* One respondent reported owning the property for 85 years, 1 for 90 years, 1 for 95 years, two for 100 years each, and 1 for 106 years.

The mean number of years of management of property in the study by property managers was 10.93 years (SD= 8.05). Of the 42 respondents who managed the property
for the owners, 85.4% said that they had been managing the property for five years or more (see Table 7).

Table 7

<table>
<thead>
<tr>
<th>Years of management</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>6</td>
<td>14.6</td>
</tr>
<tr>
<td>5-10</td>
<td>20</td>
<td>48.8</td>
</tr>
<tr>
<td>11-20</td>
<td>11</td>
<td>26.8</td>
</tr>
<tr>
<td>More than 20</td>
<td>4</td>
<td>9.8</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Objective One

The first objective of the study was to determine perceptions of participants in the French Quarter Formosan Termite Program with regard to the importance and effectiveness of and satisfaction with the program, and to compare the perceptions of different types of property owners/managers. Items 1, 2, 6, 7 and 11 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale: 1) Strongly disagree, 2) Disagree, 3) Agree, 4) Strongly agree, and 5) Undecided. Items 19, 20, 21 and 22 in Section 3 of the survey consisted of statements on which respondents expressed their degree of satisfaction on a 4-point Likert type scale: 1) Very dissatisfied, 2) Somewhat dissatisfied, 3) Somewhat satisfied, and 4) Very satisfied.

When asked their opinion of the statement “The Formosan termite is a substantial threat to property owners in the French Quarter,” a large majority of the respondents, 97% (n=154), agreed or strongly agreed. When property owners responded to the
statement “The Formosan termite management program in the French Quarter is playing an important role in preserving this historical district,” again, a large majority (96%, n=153) agreed or strongly agreed. A majority of the respondents, 86% (n=136), also said that they agreed or strongly agreed with the statement “The French Quarter termite management program has been successful in helping reduce the Formosan termite population in the test area of the French Quarter.” When the respondents were asked to respond to the statement “The amount of termite damage incurred on this property has been reduced because of the Formosan termite management program,” 84% (n=133) agreed or strongly agreed while 8% (n=13) were undecided. A slightly higher percentage of the respondents indicated that they were undecided when asked to respond to the statement “I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property,” even though the majority of the respondents, 71.9% (n=113) still agreed or strongly agreed.

Respondents were asked to indicate their degree of satisfaction, from very satisfied (4) to very dissatisfied (1), with several statements concerning the Formosan termite management program. When asked to rate “the service you received from your pest management professional,” 86% (n=135) indicated that they were very satisfied or somewhat satisfied. When asked about the “educational information received from the LSU AgCenter,” 87% (n=138) of the respondents said that they were very satisfied or somewhat satisfied. A majority of the respondents also said that they were somewhat satisfied or very satisfied when asked about “the service received from the LSU AgCenter with regard to the Formosan termite program”. Finally, when asked to rate “the overall results of the Formosan Termite management program in the French
Quarter”, 94.4% (n = 150) of the respondents said that they were somewhat or very satisfied. A summary of these frequencies and distributions is contained in Appendix H.

Tables 8 and 9 further summarize the responses of the property owners and managers to statements concerning participants’ perceptions of the importance and effectiveness of the program, respectively. Means, standard deviations, and interpretations of the means according to the interpretive scale in the footnote to the tables are presented.

Table 8
Participants’ Perceptions of Importance and Effectiveness of the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
<th>Response Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Formosan termite is a substantial threat to property owners in the French Quarter.</td>
<td>4.81</td>
<td>.65</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>The Formosan termite management program in the French Quarter is playing an important role in preserving this historical area.</td>
<td>4.67</td>
<td>.68</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>The French Quarter Formosan termite management program has been successful in helping reduce the Formosan termite population in the test area of the French Quarter</td>
<td>4.46</td>
<td>.91</td>
<td>Agree</td>
</tr>
<tr>
<td>The amount of termite damage incurred on this property has been reduced because of the Formosan termite management program.</td>
<td>4.25</td>
<td>.98</td>
<td>Agree</td>
</tr>
<tr>
<td>I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property.</td>
<td>3.79</td>
<td>.95</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Note. 1.00 to 1.50 = strongly disagree, 1.51 to 2.50 = disagree, 2.51 to 3.50 = undecided, 3.51 to 4.50 = agree, 4.51 to 5.00 = strongly agree.
Table 9
Participants’ Perceptions of Satisfaction with the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
<th>Response Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>The overall results of the Formosan Termite management program in the French Quarter</td>
<td>3.55</td>
<td>.60</td>
<td>Very Satisfied</td>
</tr>
<tr>
<td>The service received from the LSU AgCenter with regard to the Formosan Termite program</td>
<td>3.30</td>
<td>.73</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>The educational information received from the LSU AgCenter</td>
<td>3.24</td>
<td>.76</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>The service you received from your pest management professional</td>
<td>3.20</td>
<td>.76</td>
<td>Somewhat Satisfied</td>
</tr>
</tbody>
</table>

Note. 1.0 to 1.50 = very dissatisfied, 1.51 to 2.50 = dissatisfied, 2.51 to 3.50 = somewhat satisfied, 3.51 to 4.00 = very satisfied.

To compare the perceptions of effectiveness among the different types of property owners and managers in the study (owners who reside at the property, owners who reside at and lease out a portion of the property, owners who do not reside at, but lease out all of the property, and property managers who manage the property for the owners), the Analysis of Variance (ANOVA) statistical procedure was used. Results are reported in appendix I. A significant F value, \( F(3, 155) = 4.99 \), was found for item 1 on the questionnaire (The Formosan termite is a substantial threat to property owners in the French Quarter), indicating at least one significant difference existed among the four types of property owners and managers. Tukey’s Post-hoc Multiple Comparison test was used to determine specifically which groups were different. Results indicated that the owners who own, reside at and lease out a portion of the property did not agree as strongly with the statement “The Formosan termite is a substantial threat to property
owners in the French Quarter” as the other types of property owners and managers
(owners who reside at the property, owners who do not reside at, but lease out all of the
property, and property managers who manage the property for the owners). Table 10
presents the complete analysis of variance information concerning item 1, “The
Formosan termite is a substantial threat to property owners in the French Quarter,”
regarding the significant finding.

Table 10

Analysis of Variance of Item One, “The Formosan Termite is a Substantial Threat to
Property Owners in the French Quarter” by Owner/Manager Type

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>p^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>5.90</td>
<td>4.99</td>
<td>.002</td>
</tr>
<tr>
<td>Within Groups</td>
<td>155</td>
<td>61.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>66.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Tukey’s Post-hoc Multiple Comparison Test was used. Group difference: the owners
who own, reside at and rent out a portion of the property did not agree as strongly with
the statement “The Formosan termite is a substantial threat to property owners in the
French Quarter” as the other types of property owners and managers.

A significant F value, F(3, 153) = 3.72, was also found for item 11 (“I would be
willing to pay contract renewal fees to pest control operators to maintain yearly termite
protection on my property”), again indicating that at least one significant difference
existed among the four types of property owners and managers. Tukey’s Post-hoc
multiple comparison test was used to follow up the significant F value to determine
specifically which groups were different. The owners who own, reside at and lease out a
portion of their property were less agreeable to the statement “I would be willing to pay
contract renewal fees to pest control operators to maintain yearly termite protection on
my property” than were the other types of property owners (owners who reside at the property, owners who do not reside at, but lease out all of the property, and property managers who manage the property for the owners). Table 11 presents the analysis of variance information for item 11, “I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property,” regarding the significant finding.

Table 11

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>F</th>
<th>p^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>9.54</td>
<td>3.73</td>
<td>.013</td>
</tr>
<tr>
<td>Within Groups</td>
<td>153</td>
<td>130.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>156</td>
<td>140.06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

^a Tukey’s Post-hoc Multiple Comparison Test was used. Group differences: The owners who own, reside at and rent out a portion of their property were less agreeable to the statement “I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property.”

Objective 2

The second objective of the study was to determine the knowledge level of the participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite management and conditions associated with termite infestations.

Program participants responded to questions measuring their knowledge of termite management and conditions associated with termite infestations. Respondents were given a list of seven conditions, all of which are conducive to and/or associated with
termite infestations. They were asked to indicate on a 4-point Likert type scale whether or not they thought that these conditions were not important (1), of low importance (2), of high importance (3), or of very high importance (4), with regard to termite infestations.

Since all conditions are conducive to infestations, respondents answered either correctly or incorrectly (correct = high or very high importance, incorrect = low importance or not important.) A knowledge score was assigned based on the number of correct and incorrect responses. A value of 1 was given for each incorrect response (Not Important or Low Importance) and a value of 2 was given for each correct response (High Importance or Very High Importance).

The majority of the respondents (97.4%, n=154) answered correctly when they responded that they thought wood-to-soil contact was of high or very high importance when associated with termite infestations. A large majority of the respondents (96.2%, n= 151) also answered correctly (high or very high importance) when they indicated that they believed moisture sources contributed to termite problems. When asked about construction methods, 86.7% (n=136) of the respondents answered correctly and indicated a belief that this was a problem of high or very high importance when associated with termite infestations. A majority of respondents also answered correctly when they said that they thought that sharing common walls was a condition conducive to termites. A summary of these responses is presented in table 12.

The majority of the respondents (75.8%, n=119) also answered correctly when they responded that they thought that vegetation and vines on walls were of high or very high importance when associated with termite problems. When asked about trees in the landscape and mulch in flowerbeds, only 65.2% (n= 103) of the respondents answered
Only 58.9% of the respondents answered correctly by indicating that they believed that mulch in flowerbeds was a highly important or very highly important condition associated with termite infestations.

Table 12

**French Quarter Formosan Termite Program Participants’ Knowledge of the FST Management Program-Frequencies**

<table>
<thead>
<tr>
<th>Item</th>
<th>Incorrect</th>
<th>Correct</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood-to-soil contact</td>
<td>n</td>
<td>4</td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>2.5</td>
<td>97.5</td>
</tr>
<tr>
<td>Construction methods</td>
<td>n</td>
<td>21</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>13.3</td>
<td>86.7</td>
</tr>
<tr>
<td>Common walls</td>
<td>n</td>
<td>34</td>
<td>123</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>21.7</td>
<td>78.3</td>
</tr>
<tr>
<td>Vegetation/ vines on walls</td>
<td>n</td>
<td>38</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>24.2</td>
<td>75.8</td>
</tr>
<tr>
<td>Moisture sources</td>
<td>n</td>
<td>46</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>29.3</td>
<td>70.7</td>
</tr>
<tr>
<td>Trees in landscape</td>
<td>n</td>
<td>55</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>34.8</td>
<td>65.2</td>
</tr>
<tr>
<td>Mulch/ flowerbeds</td>
<td>n</td>
<td>65</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>41.1</td>
<td>58.9</td>
</tr>
</tbody>
</table>
condition associated with termite infestations. Table 13 further summarizes the participants’ responses.

Table 13

French Quarter Formosan Termite Program Participants’ Knowledge of the FST Management Program- Means and Standard Deviations

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood-to soil contact</td>
<td>1.97</td>
<td>.16</td>
</tr>
<tr>
<td>Moisture sources (leaky roofs, gutters, etc.)</td>
<td>1.96</td>
<td>.19</td>
</tr>
<tr>
<td>Construction methods</td>
<td>1.87</td>
<td>.34</td>
</tr>
<tr>
<td>Common walls</td>
<td>1.78</td>
<td>.41</td>
</tr>
<tr>
<td>Vegetation/ vines on walls</td>
<td>1.76</td>
<td>.43</td>
</tr>
<tr>
<td>Trees in landscape</td>
<td>1.65</td>
<td>.48</td>
</tr>
<tr>
<td>Mulch/ flowerbeds</td>
<td>1.59</td>
<td>.49</td>
</tr>
</tbody>
</table>

*Note. Correct response (high or very high importance = 2), incorrect response, (not important or low importance = 1)*

Termite management knowledge scores were computed for the respondents. These scores were derived from summation of all knowledge score points (1 point for each incorrect response, 2 points for each correct response) divided by the total number of points possible (14). These knowledge scores indicated that 60% of the respondents were knowledgeable about termite management. These scores are summarized in table 14.

The following scale was developed for the knowledge scores:

Greater than or equal to .90-- very knowledgeable
.80-.89------------------------ knowledgeable
.70-.79------------------------ some knowledgeable
Less than .70----------------little knowledge
Table 14

Termite Management Knowledge Scores of Formosan Termite Program Participants

<table>
<thead>
<tr>
<th>Term</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little Knowledge</td>
<td>31</td>
<td>19.7</td>
</tr>
<tr>
<td>Some Knowledge</td>
<td>32</td>
<td>20.3</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td>94</td>
<td>60.0</td>
</tr>
<tr>
<td>Very Knowledgeable</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: Very Knowledgeable = ≥ .90; Knowledgeable = .80 - .89; Some Knowledge = .70-.79; Little Knowledge = ≤ .70

Objective 3

The third objective of the study was to determine the knowledge level of the participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology, identification, and control options.

Respondents were asked to respond to questions 23-34 in Section 4 of the survey, which consisted of closed ended and true or false questions concerning general termite biology, identification, and control. Responses to these questions are summarized in table 15.

A large majority of the respondents (98%, n=156) answered correctly by responding false to the statement “One thorough termite treatment by a pest control operator will prevent termites from ever returning to your building.” Likewise, a large majority also answered correctly by responding false to the statement “After a pest control company treats your home for termites and issues a contract to you for this work, you may be assured that termites will not return.” When given the statement “Formosan
termites can cause a great amount of damage in a short time," 91% (n=143) of the respondents answered correctly by replying true.

The majority of the respondents (81%, n=140) also answered correctly when they responded that a standard termite contract issued by a pest control operator did not cover damage caused by termites. Most of the respondents (88%, n=140) said that they could tell the difference between an ant and a termite.

When asked questions concerning swarming times of the year for Formosan and native termites, 88% (n=138) of the respondents answered correctly for the Formosan termite, but only 32% (n= 50) knew the time of year that native termites were most likely to swarm. Only about one-half of the respondents answered correctly when they indicated that they knew that Formosan termites were subterranean termites.

Table 15

<table>
<thead>
<tr>
<th>Question</th>
<th>Incorrect</th>
<th>Correct</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. How long do you think it would take for an infestation of Formosan termites to cause structural damage to a building?</td>
<td>n 114</td>
<td>% 73.1</td>
<td>156</td>
</tr>
<tr>
<td>24. Can you tell the difference between an ant and a termite?</td>
<td>n 19</td>
<td>% 11.9</td>
<td>159</td>
</tr>
<tr>
<td>25. How much do you believe a pest control operator would charge for a properly applied liquid barrier treatment on an average (1800-2000 sq. ft) home?</td>
<td>n 101</td>
<td>% 66.9</td>
<td>151</td>
</tr>
<tr>
<td>26. How long do you think a properly applied liquid barrier termite treatment will protect a structure (if applied today)?</td>
<td>n 85</td>
<td>% 55.9</td>
<td>152</td>
</tr>
<tr>
<td>27. After a pest control company treats your home for termites and issues a contract to you for this work, you may be assured that termites will not return.</td>
<td>n 8</td>
<td>% 5.1</td>
<td>156</td>
</tr>
<tr>
<td>Question</td>
<td>Incorrect</td>
<td>Correct</td>
<td>Total</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>28. One thorough termite treatment by a pest control operator will prevent termites from ever returning to your building.</td>
<td>(n) 3</td>
<td>156</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>(%) 1.9</td>
<td>98.1</td>
<td>100</td>
</tr>
<tr>
<td>29. Does a standard termite contract issued by a pest control company cover damage caused by the termites?</td>
<td>(n) 17</td>
<td>140</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>(%) 10.8</td>
<td>89.2</td>
<td>100</td>
</tr>
<tr>
<td>30. In general, which form of termite treatment do you consider to be most effective, liquids or baits?</td>
<td>(n) 157</td>
<td>0</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>(%) 0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>31. Formosan termites are subterranean termites, true or false?</td>
<td>(n) 76</td>
<td>80</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>(%) 48.7</td>
<td>51.3</td>
<td>100</td>
</tr>
<tr>
<td>32. Formosan termites can cause a great amount of damage in a short time, true or false?</td>
<td>(n) 15</td>
<td>143</td>
<td>158</td>
</tr>
<tr>
<td></td>
<td>(%) 9.5</td>
<td>90.5</td>
<td>100</td>
</tr>
<tr>
<td>33. What time of the year are native subterranean termites most likely to swarm?</td>
<td>(n) 107</td>
<td>50</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>(%) 68.2</td>
<td>31.8</td>
<td>100</td>
</tr>
<tr>
<td>34. What time of the year are Formosan termites most likely to swarm?</td>
<td>(n) 19</td>
<td>138</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>(%) 12.1</td>
<td>87.9</td>
<td>100</td>
</tr>
</tbody>
</table>

Only 44\% (\(n=67\)) of the respondents indicated that they knew how long a properly applied liquid termite treatment would last if applied today and only 33\% (\(n=50\)) responded correctly when asked how much a pest control operator would charge for a properly applied liquid treatment on an average (1800-2000 sq foot) home.

General termite knowledge scores were computed for the respondents. These scores were derived from summation of all general knowledge score points (1 point for each incorrect response, 2 points for each correct response) divided by the total number of points possible (24). These scores are summarized in table 16.
The following scale was developed for the knowledge scores:

Greater than or equal to .90-- very knowledgeable  
.80-.89------------------------ knowledgeable  
.70-.79------------------------- some knowledge  
Less than .70------------------ little knowledge

Table 16  
General Termite Knowledge Scores of French Quarter Formosan Termite Program Participants

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little Knowledge</td>
<td>12</td>
</tr>
<tr>
<td>Some Knowledge</td>
<td>63</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td>71</td>
</tr>
<tr>
<td>Very Knowledgeable</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>146</td>
</tr>
</tbody>
</table>

*Note*: Very Knowledgeable = ≥ .90; Knowledgeable = .80-.89; Some Knowledge = .70-.79; Little Knowledge = ≤ .70

Table 17 further summarizes responses to questions and items associated with Formosan termite biology, identification and control options.

Table 17  
French Quarter Formosan Termite Program Participants’ Knowledge Level of Termite Biology, Identification, Prevention and Control Options

<table>
<thead>
<tr>
<th>Question</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. How long do you think it would take for an infestation of Formosan termites to cause structural damage to a building?</td>
<td>156</td>
<td>1.27</td>
<td>.45</td>
</tr>
<tr>
<td>24. Can you tell the difference between an ant and a termite?</td>
<td>159</td>
<td>1.88</td>
<td>.32</td>
</tr>
<tr>
<td>25. How much do you believe a pest control operator would charge for a properly applied liquid barrier treatment on an average (1800-2000 sq. ft) home?</td>
<td>151</td>
<td>1.33</td>
<td>.47</td>
</tr>
</tbody>
</table>

Table continued
Question | $n$ | Mean | $SD$ \\
--- | --- | --- | --- \\
26. How long do you think a properly applied liquid barrier termite treatment will protect a structure (if applied today)? | 152 | 1.44 | .50 \\
27. After a pest control company treats your home for termites and issues a contract to you for this work, you may be assured that termites will not return. | 156 | 1.94 | .22 \\
28. One thorough termite treatment by a pest control operator will prevent termites from ever returning to your building. | 159 | 1.98 | .14 \\
29. Does a standard termite contract issued by a pest control company cover damage caused by the termites? | 157 | 1.89 | .31 \\
30. In general, which form of termite treatment do you consider to be most effective, liquids or baits? | 157 | 2.00 | .00 \\
31. Formosan termites are subterranean termites, true or false? | 156 | 1.51 | .50 \\
32. Formosan termites can cause a great amount of damage in a short time, true or false? | 158 | 1.91 | .29 \\
33. What time of the year are native subterranean termites most likely to swarm? | 157 | 1.32 | .47 \\
34. What time of the year are Formosan termites most likely to swarm? | 157 | 1.88 | .33 \\

Objective 4

The fourth objective of the study was to compare participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology, identification, and prevention, and their knowledge of termite management with the knowledge level of a group of non-participants with regard to the same items. Items 12-18 in Section 2 of the survey consisted of a list of seven conditions conducive to termite
infestations and of importance in termite management. The respondents were asked to indicate their agreement with the importance of each item on a 4-point Likert type scale. Respondents were also asked to respond to questions 23-34 in Section 4 of the survey, which consisted of questions measuring general termite knowledge.

A group of 60 New Orleans residents who work at the Southern Research Center in New Orleans and who were not participants in the French Quarter Formosan Termite Program responded to the management and general knowledge portion of the survey (Section 2, questions 12-18, and Section 4, questions 23-34.)

The t-test statistical procedure was used to compare the scores of the participants of the study and the scores of the non-participants in order to find out if a difference existed between the groups, indicating education program effectiveness. The participants and non-participants’ scores were found to be significantly different for both the management knowledge scores and the general termite knowledge scores. Participants of the French Quarter Formosan termite study had significantly higher scores than the group of non-participants on both general termite knowledge and termite management. The mean termite management knowledge score for the participants was 10.98 (SD = 1.42), and the mean termite management knowledge score for the non-participants was 10.17 (SD = 1.68) (t_{214} = 3.55, p < .001. The mean general termite knowledge score for the non-participants was 17.59 (SD = 1.91), and the mean general termite knowledge score for the participants of the study was 18.62 (SD = 1.44) (t_{203} = 4.22, p < .001. (See table 18.)
Table 18.

Comparison of Management and General Termite Knowledge Scores of French Quarter Formosan Termite Program Participants and Non-Participants

<table>
<thead>
<tr>
<th></th>
<th>Participants’ Scores Mean/ SD</th>
<th>Non-participants’ Scores Mean/ SD</th>
<th>df</th>
<th>Diff</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>10.98/ 1.68</td>
<td>10.17/ 1.68</td>
<td>214</td>
<td>.81</td>
<td>3.55</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>General Knowledge</td>
<td>18.62/ 1.44</td>
<td>17.59/ 1.91</td>
<td>203</td>
<td>1.03</td>
<td>4.22</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note. Maximum score for management knowledge = 14, maximum score for general termite knowledge = 24.

Objective 5

The fifth objective was to compare perceptions of the program’s importance and effectiveness and future among the four types of property owners and managers in the French Quarter Formosan Termite Program. Items 2, 6, 7, 8, 9 and 10 in Section 1 of the survey consisted of statements on which respondents were asked to express their degree of satisfaction on a 4-point Likert type scale. Frequencies, means and standard deviations were calculated for these responses. An analysis of variance (ANOVA) was run to determine if there were differences among the four groups of owners and managers. Results of the ANOVA indicated that there were no significant differences among the four groups with respect to their perceptions of program effectiveness and the continuation and future of the project.

Objective 6

The sixth objective of the study was to determine perceptions of participants of the French Quarter Formosan Termite Program with regard to the future continuation and expansion of the program and to see if a relationship existed between knowledge level of
participants and perceptions of future continuation and expansion of the program. Items 8, 9, and 10 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale.

When participants were asked to indicate their level of agreement with the statement “Congress should continue to fund research efforts aimed at the control and management of the Formosan subterranean termite in the U.S.,” 98% (n=155) of the respondents agreed or strongly agreed with the statement. Likewise, the majority of the respondents, (98%, n=155) agreed or strongly agreed with the statement “Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the U.S.” When asked to indicate their level of agreement with the statement “the Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter,” again, a majority of the respondents (90%, n=143) agreed or strongly agreed. These responses are summarized in table 19.

Table 19

Perceptions of Participants of the French Quarter Formosan Termite Program with Regard to Future Continuation and Expansion of the Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter.</td>
<td>n</td>
<td>1</td>
<td>1</td>
<td>44</td>
<td>99</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>.6</td>
<td>.6</td>
<td>27.7</td>
<td>62.3</td>
<td>8.8</td>
</tr>
</tbody>
</table>

Table continued
9. Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>2</td>
<td>1</td>
<td>24</td>
<td>131</td>
<td>1</td>
<td>159</td>
</tr>
<tr>
<td>%</td>
<td>1.3</td>
<td>.6</td>
<td>15.1</td>
<td>82.4</td>
<td>.6</td>
<td>100</td>
</tr>
</tbody>
</table>

10. Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>2</td>
<td>1</td>
<td>45</td>
<td>110</td>
<td>1</td>
<td>159</td>
</tr>
<tr>
<td>%</td>
<td>1.3</td>
<td>.6</td>
<td>28.3</td>
<td>69.2</td>
<td>.6</td>
<td>100</td>
</tr>
</tbody>
</table>

**Note.** SD = Strongly disagree, D = Disagree, A = Agree, SA = Strongly agree, U = Undecided.

A Pearson Product Moment correlation coefficient was used in order to determine if a relationship existed between the knowledge scores from objective 2 and 3 and the perceptions of the participants with respect to the continuation and expansion of the project. For interpretation of correlation coefficients, Davis’s proposed set of descriptors was used (Davis, 1971). The coefficients and their descriptions are as follows:

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.70 or higher</td>
<td>Very strong association</td>
</tr>
<tr>
<td>.50 to .69</td>
<td>Substantial association</td>
</tr>
<tr>
<td>.30 to .49</td>
<td>Moderate association</td>
</tr>
<tr>
<td>.10 to .29</td>
<td>Low association</td>
</tr>
<tr>
<td>.01 to .09</td>
<td>Negligible association</td>
</tr>
</tbody>
</table>

Results from these tests indicated that no significant relationship existed between the knowledge scores and perceptions with respect to continuation and expansion of the project (items 8, 9 and 10). There was no significant relationship between the knowledge
scores and the responses to the statement “the Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter” 

(r = .01, p = .92) (management knowledge scores); (r = -.16, p = .06) (general termite knowledge scores). There was no significant relationship between the knowledge scores and the responses to the statement “Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States” 

(r = .08, p = .29) (management knowledge scores); (r = -.01, p = .92) (general termite knowledge scores). There was also no significant relationship between the knowledge scores and the responses to the statement “Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States” 

(r = -.04, p = .65) (management knowledge scores); (r = .00, p = 1.0) (general termite knowledge scores). The results from the Pearson Product moment correlation coefficient procedure are presented in Tables 20 and 21.

Table 20

Relationships Between Termite Management Scores and Formosan Termite Management Program Participants’ Perceptions of Future Continuation and Expansion of the Program

<table>
<thead>
<tr>
<th>Item</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter</td>
<td>.01</td>
<td>.92</td>
</tr>
<tr>
<td>Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States</td>
<td>-.08</td>
<td>.29</td>
</tr>
<tr>
<td>Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States</td>
<td>-.04</td>
<td>.65</td>
</tr>
</tbody>
</table>
### Table 21

**Relationship Between General Termite Knowledge Scores and Formosan Termite Management Program Participants’ Perceptions of Future Continuation and Expansion of the Program**

<table>
<thead>
<tr>
<th>Item</th>
<th>$r$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter</td>
<td>-.12</td>
<td>.06</td>
</tr>
<tr>
<td>Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States</td>
<td>-.08</td>
<td>-.01</td>
</tr>
<tr>
<td>Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States</td>
<td>.00</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine the program participants’ knowledge and perceptions of the effectiveness of the French Quarter Formosan Termite Program.

The major objectives of this study were:

1. To determine perceptions of participants in the French Quarter Formosan Termite Program on the importance and effectiveness of the program, and to compare the perceptions of different types of property owners/managers.

2. To determine the knowledge level of participants of the French Quarter Formosan Termite Program with regard to their knowledge of the FST management program.

3. To determine the knowledge level of participants of the French Quarter Formosan Program with regard to their knowledge of termite biology, identification, prevention and the control options.

4. To compare participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology, identification, and prevention, and their knowledge of termite management with the knowledge level of a group of non-participants with regard to the same items.

5. To compare perceptions of program importance, effectiveness, and future among the four types of property owners/managers in the French Quarter Formosan Termite Program.

6. To determine perceptions of participants of the French Quarter Formosan Termite Program with regard to future continuation and expansion of the
program and to see if a relationship existed between knowledge level of participants and perceptions of future continuation and expansion of the program.

In order to accomplish these objectives, all 225 property owners or managers in the original 15-block area of the French Quarter Formosan Termite Program were surveyed. Names and addresses were obtained from the Orleans Parish tax assessor’s office. The investigator-constructed questionnaire included questions that were developed to accomplish the six objectives of the study. General and specific questions on knowledge, effectiveness, satisfaction, perception, and demographics were included to determine the participants’ perceptions of the French Quarter Program. The survey was distributed to participants via U.S. mail. A cover letter that introduced the property owners to the objectives of the study accompanied the questionnaire. Instructions on completing and returning the survey were included in both the cover letter and on the questionnaire. Return postage and an envelope with complete return mailing address were included.

In order to obtain the maximum percentage of questionnaire returns, the following follow-up techniques were used:

1. If the questionnaire was not returned within 7-10 days after the initial mailing, a post card was sent to the first mailing non-respondents as a friendly reminder. An offer was also made to send another questionnaire if one was needed (see Appendix E).

2. A second follow-up packet was sent to second-mailing non-respondents about three weeks after the original mailing. Included in this packet was a second letter
emphasizing the importance of responding to the questionnaire and a return-addressed postage-paid envelope (see Appendix F).

3. A final follow-up was sent to third mailing non-respondents about six-seven weeks after the mailing of the original questionnaire. This mailing also included a letter emphasizing the importance of responding to the survey and another replacement survey and return envelope (see Appendix G).

It was decided that any survey returned after September 12, 2003 would not be included in the data analysis.

After completion of the survey, in order to determine any differences between the respondents and any non-respondents, a random sample of 25 non-respondents was selected for a telephone survey. The telephone interview consisted of 10 randomly selected items from the original survey. The data from these telephone interviews were then statistically compared with the data from the respondents to determine if differences occurred. No statistically significant differences were found.

Results and Conclusions

The demographics of the participants of the French Quarter Formosan Termite Program were identified through responses to several of the items in the questionnaire. The following demographic information was identified: gender, age, education level, the classification of the property owner or manager by primary use of the property, and number of years the respondent owned or managed the property in the study.

The majority of the respondents of the French Quarter Formosan Termite Program survey were male and were 50 years of age or older. The level of education of the respondents varied with 5% having only a high school diploma, 34% having some
college, 2% having an associate degree, 36% having a bachelor’s degree, 9% having a master’s degree, 1% having a doctoral degree and 10% having a professional degree. The average number of years the participants had owned the property in the study was 25.75 years and the average number of years that the property managers had managed the property in the study was 10.93 years. Most of the properties in the study were reported to have at least some residential use.

The first objective of the study was to determine perceptions of participants in the French Quarter Formosan Termite Program with regard to the importance and effectiveness of and satisfaction with the program, and to compare the perceptions of different types of property owners/managers. Items 1, 2, 6, 7 and 11 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale: 1) Strongly disagree, 2) Disagree, 3) Agree, 4) Strongly agree, and 5) Undecided. Items 19, 20, 21 and 22 in Section 3 of the survey consisted of statements on which respondents expressed their degree of satisfaction on a 4-point Likert type scale: 1) Very dissatisfied, 2) Somewhat dissatisfied, 3) Somewhat satisfied, and 4) Very satisfied.

Overall, the vast majority of the respondents indicated that they thought that the Formosan subterranean termite was a substantial threat to properties in the French Quarter and that the French Quarter Formosan Termite Program was very effective in termite damage reduction. Analysis of variance was used to compare perceptions of program effectiveness among the different types of property owners and managers. The results indicated that the owners who own, reside at and rent out a portion of the property did not agree as strongly with the statement “The Formosan termite is a substantial threat
to property owners in the French Quarter” as the other types of property owners and managers. The owners who own, reside at and rent out a portion of their property were less agreeable to the statement “I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property.” The majority of the participants were somewhat or very satisfied with the effectiveness of the program.

It can be concluded from the above results that the French Quarter Formosan Termite Program is important to all property owners and managers and that the program is viewed as being effective as indicated by their high level of satisfaction with the program. It is also concluded that property owners who reside at and lease a portion of the property do not feel as strongly that the Formosan Termite is a threat to them as other property owners and managers, nor are they as willing to pay contract renewal fees to pest control operators to maintain termite protection on their properties as the other types of owners and managers.

The second objective of the study was to determine the knowledge level of the participants of the French Quarter Formosan Termite Program with regard to their knowledge of the FST management program. Items 12-18 in Section 2 of the survey consisted of seven conditions that are conducive to termite infestations to which respondents indicated their agreement of the importance of each item on a 4-point Likert type scale. Although the vast majority of respondents answered correctly when they indicated that wood-to-soil contact (97.4%, n= 154), moisture (96.2%, n= 151) and vegetation growing on walls (75.8%, n= 119) were conditions that were conducive to termites, only 65% said that they thought trees could play a role in termite populations.
and only 50% of the respondents said they believed that mulch in flowerbeds could contribute to a termite problem.

It can be concluded from these results that participants in the French Quarter Formosan Termite Program were knowledgeable about the conditions that are conducive to termites and important in termite management.

The third objective of the study was to determine the knowledge level of the participants of the French Quarter Formosan Program with regard to their knowledge of termite biology, identification and prevention, and the available control options. Respondents were asked to respond to questions 23-34 in Section 4 of the survey, which consisted of closed-ended and true or false questions concerning general termite biology, identification and control. When asked to answer these general termite knowledge questions, the majority of the respondents answered correctly to all but four. Only 50% of the respondents knew that Formosan termites are subterranean termites, only 44% knew how long a properly applied termite treatment should last, only 33% knew how much a properly applied liquid treatment for termites should cost for an average (1800-2000 sq ft) home, and only 32% of the respondents knew the correct time of year that native termites swarm,

From the above results it can be concluded that the participants in the French Quarter Formosan Termite Program are knowledgeable of termite biology, identification and prevention, and the available control options, although weakness in some areas was indicated.

The fourth objective of the study was to compare participants of the French Quarter Formosan Termite Program with respect to their knowledge of termite biology,
identification, and prevention, and their knowledge of termite management with the knowledge level of a group of non-participants with regard to the same items. Items 12-18 in Section 2 of the survey consisted of a list of seven conditions conducive to termite infestations and important in termite management. The respondents were asked to indicate their agreement with the importance of each item on a 4-point Likert type scale. Respondents were also asked to respond to questions 23-34 in Section 4 of the survey, which consisted of questions measuring general termite knowledge. Knowledge scores based on the number of correct answers were calculated for the respondents. When the knowledge scores (computed from responses to the questions that related to termite management and general termite knowledge) of the participants were compared to the knowledge scores of a group of non-participants, statistically significant differences were found between them. Participants in the French Quarter Formosan termite program had significantly higher scores on both general termite knowledge and termite management knowledge than the non-participants. Therefore it can be concluded that participants of the French Quarter Formosan Termite Program are more knowledgeable about termite management, biology and control than the group of non-participants.

The fifth objective was to compare perceptions of program importance, effectiveness, and future among the four types of property owners/managers in the French Quarter Formosan Termite Program. Items 2, 6, 7, 8, 9 and 10 in Section 1 of the survey consisted of statements on which respondents expressed their degree of satisfaction on a 4-point Likert type scale. Results showed that there was no significant difference among the different types of property owners and managers as to their perceptions of effectiveness and the future of the program. All four groups of property
owners and managers indicated that they thought that the program was, overall, a very effective program and should be continued and expanded through continued federal funding. From the above results, it is concluded that all property owners and managers in the French Quarter, regardless of the use of the property, are committed caring owners who want to do everything they can to preserve and protect their property from destruction by termites. Property in the French Quarter is some of the most expensive property in the city of New Orleans. Owners and managers of this property, regardless of how they use the property, realize that the termite infestation problem is very real and could possibly destroy the value of not only their property, but of the entire neighborhood, if left unchecked.

The sixth objective of the study was to determine perceptions of participants of the French Quarter Formosan Termite Program with regard to future continuation and expansion of the program and to see if a relationship existed between knowledge level of participants and perceptions of future continuation and expansion of the program. Items 8, 9, and 10 in Section 1 of the survey consisted of statements on which respondents indicated their level of agreement on a 5-point Likert type scale. No significant relationship was found between knowledge scores and perceptions of the participants with respect to continuation and expansion of the project (items 8, 9 and 10). There was no significant relationship between knowledge scores and the responses to the statement “The Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter” (r = .01, p = .92) (management knowledge scores); (r = -.16, p = .06) (general termite knowledge scores). There was no significant relationship between knowledge scores and
the responses to the statement “Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States” (r = .08, p = .29) (management knowledge scores); (r = -.01, p = .92) (general termite knowledge scores). There was also no significant relationship between the knowledge scores and the responses to the statement “Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States” (r = -.04, p = .65)(management knowledge scores); (r = .00, p = 1.0)(general termite knowledge scores). A large majority of the respondents indicated that they felt that the Formosan termite program should be continued and eventually expanded to the remainder of the properties in the French Quarter. Once again it can be concluded that the vast majority of the respondents are in favor of the continuation and expansion of the French Quarter Formosan Termite Program. It can also be concluded that there is no difference in these opinions based on the general termite scores and the termite management knowledge scores of the property owners and managers.

Several general conclusions can be drawn from the study in addition to the specific conclusions indicated for each objective.

1) While the termite education program can be considered to be effective in that program participants were found to be more knowledgeable about termites and termite management than non-participants, it would appear that the knowledge level of program participants could be further increased through continued and expanded educational efforts, including training opportunities in and educational materials on termite biology, management and control.
2) There is strong support among program participants for continuation and expansion of the program based on their successful involvement and experience, and their belief that the program was very effective in reducing termite population and damage and hence was worth continuing and expanding.

3) The results of this study suggest that program funds were well spent and support the decisions and policies of the LSU Agricultural Center and Agricultural Research Service concerning the French Quarter Formosan Termite Program. Therefore, the U.S. Congress should consider continuing to fund research and educational efforts directed at the control and management of the Formosan subterranean termite in the United States.

4) It should be gratifying to the LSU Agricultural Center and U.S.D.A.’s Agricultural Research Service that property owners in the French Quarter use these sources most often for information concerning the Formosan termite. However, attention should be paid to the fact that a very high percentage of the respondents said the internet was currently of low or no importance to them as a source of information on Formosan termites.

Recommendations

The following recommendations are based on the conclusions of the study:

1) The French Quarter Formosan Termite Program should be continued and expanded to eventually include all properties in the French Quarter.

2) Participants in future phases of the Program should continue to be evaluated in order to determine their perceptions of effectiveness and satisfaction with the program. Continuing evaluation can help to build and strengthen the
program. These evaluations should contain more open-ended questions that would allow participants to indicate any specific problems that they may have encountered with the program.

3) A baseline survey should be conducted of participants in Phase III, in January of 2004, in order to determine their knowledge levels and perceptions prior to program intervention.

4) The overall termite education program should be strengthened with more training materials developed and more training opportunities made available to property owners and managers in the current program and in future expansions of the program.

5) An educational program should be designed to transfer termite control and management information to other areas of the city not participating in the French Quarter Formosan Termite Program. A comprehensive model of the French Quarter Formosan Termite Program, a model that should include technical information, education, economic and cost benefit items, and varied delivery methods, could be developed for use in other areas of the city, state or country where the Formosan termite is a problem.
REFERENCES


APPENDIX A

LSU- USDA AGREEMENT
THIS COOPERATIVE AGREEMENT ("Agreement") is made and entered into by the United States Department of Agriculture, Agricultural Research Service ("ARS") and the Board of Supervisors of Louisiana State University and Agricultural and Mechanical College ("Cooperator") acting through the two arms of its Agricultural Center (LSUAC): the Louisiana Cooperative Extension Service ("LCES") and the Louisiana Agricultural Experiment Station ("LAES"); and

WHEREAS, the Cooperator is actively engaged in a variety of programs revolving around the Formosan subterranean termite, including basic and applied research, statewide education programs, and population management studies; and

WHEREAS, the ARS is engaged in a program to evaluate the feasibility of managing the Formosan subterranean termite on a large-area basis; and

WHEREAS the project contemplated by this Agreement is expected to be of mutual interest and benefit to Cooperator and to ARS; will further the research and public service missions of Cooperator in a manner consistent with its status as a non-profit, tax-exempt, educational institution; and may derive benefits for ARS, Cooperator, and the people of the United States through inventions, improvements, or discoveries that may possibly result from this Agreement;

NOW, THEREFORE, for and in consideration of the promises and mutual covenants herein contained, and other good and valuable considerations, the parties hereby mutually agree with each other as follows:

A. ARS and Cooperator Agree to the Following Definitions:

1. "Project" shall mean the three-part project described in section B below and Attachment I.

2. "Project Period" shall mean the period indicated on page 1 of this Agreement.

B. The Cooperator Agrees To:

1. Collaborate with ARS in the planning, execution, and evaluation of the three-part Project as delineated below and detailed in Attachment I, Statement of Work:

Part 1. Research on the Biology and Control of the Formosan Subterranean Termite, Including Site-Specific Testing of Registered New Technologies, to be conducted by the LAES.

Part 2. Termite Management Education Program, Including Wide-Area Pilot Demonstration in the Vieux Carre, to be conducted by the LCES.
Part 3. Management of Operations Associated with Site-Specific Testing and Wide Area Pilot Demonstration, to be coordinated by the LSU Agricultural Center (LAES and LCES) with the USDA Agricultural Research Service (ARS).

2. Provide representatives to maintain close liaison with ARS through scheduled visits and other means to evaluate research progress and to assist in the planning and coordination of the work to be undertaken. Drs. Dennis Ring and Dale Pollet will represent the LCES, and Drs. Gregg Henderson and Frank Guillot will represent the LAES.

3. Provide necessary personnel, materials, equipment, supplies, and facilities as mutually agreed upon.

4. Ensure that the work performed will be conducted as agreed to in accordance with the terms and conditions of this Cooperative Agreement or as modified by mutual consent of the parties.

5. Participate in scheduled ARS Program-wide meetings.

6. Participate in education and solicitation meetings with homeowners and periodic meetings to update participants on project activities.


8. Make semi-annual reports, based on the effective date of this award, to the Authorized Departmental Officer (ADO) through the Authorized Departmental Officer’s Designated Representative (ADODR) on the progress of the work and such other reports as may be mutually agreed upon, including a final report detailing all work done and results accomplished within 90 days of project completion.

9. Submit quarterly financial reports, based upon the effective date of this award, to the ADO through the ADODR on Standard Form (SF) 269, Financial Status Report, and a final report within 90 days of project completion.

10. Submit to the ADO through the ADODR an annual report of inventions and subawards, based upon the effective date of this award, and a final report within 90 days of project completion of this Cooperative Agreement in accordance with Schedule 1, attached.
APPENDIX B

FRENCH QUARTER TEST AREA MAP
French Quarter Formosan Termite Management Program- Phase I
APPENDIX C

QUESTIONNAIRE
Operation Full Stop

New Orleans’ French Quarter Formosan Termite Management Program

Participant Survey
Investigators: The following investigators are available for questions about this study, Monday – Friday, 8a.m. – 4:30 p.m.

Dr. Satish Verma, Advisor 225-578-6194
Mr. Alan Morgan, Doctoral Student 225-578-2368

Purpose of the Study: The purpose of this study is to determine the French Quarter Formosan termite management program participants’ knowledge and perceptions of the effectiveness of the program. This is a study for a dissertation in the School of Human Resource Education and Workforce Development.

Subject Inclusion: Property owners and property managers of phase I of the French Quarter Formosan termite management program in New Orleans, Louisiana.

Study Procedures: The subjects will spend about 20 minutes completing the mailed questionnaire, which consists of 48 questions in 6 sections designed to determine program knowledge, program perceptions, and selected demographic data.

Benefits: The study may yield valuable information concerning satisfaction levels of the program, which could be used to adjust future expansions of the program, and to determine change in knowledge and behavior with regards to termite infestations and biology.

Risks: The only study risk is the inadvertent and unintentional release of participation status. Every effort will be made to maintain anonymity regarding individual responses. Confidentiality of the study records will be maintained with files being kept in secure files to which only the investigators have access.

Right to Refuse: Participants may choose to not participate as completion of the questionnaire is voluntary.

Privacy: Results of this study may be published, but no names or identifying information will be included in the publication. Subject identity will remain confidential unless disclosure is required by law. Subject responses on the questionnaire will be anonymous.

Consent: I have read and understood the above description of this study and all questions have been answered. I may direct additional questions that I may have regarding study specifics to the investigators. If I have questions about subjects’ rights or other concerns, I can contact Robert C. Mathews, Institutional Review Board, (225) 578-8692. I agree to participate in the study described above and my participation with the survey serves as my giving consent.
Dear French Quarter Property Owner and Property Management Agents,

We are conducting a study of property owners and certain property management agents involved in the Formosan termite management program in the French Quarter. This survey will enable us to better understand the perceptions of the program with respect to various aspects of the first phase of the French Quarter Formosan Termite Management Program of USDA’s Operation Fullstop. The survey is completely confidential, and only summary information will be reported in study results. The number at the top of the survey simply allows us to track when we receive your completed survey. This will allow us to be sure that you will not receive subsequent surveys or follow-up phone calls.

After you have completed the survey, please place it in the postage paid envelope and return it to us.

Thank you in advance for your help with this survey. If you have any questions concerning this survey, please call.

Alan L. Morgan
Department of Entomology
LSU Agricultural Center
225-578-2180
amorgan@agctr.lsu.edu
To what extent do you agree or disagree with each of the following:

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Formosan termite is a substantial threat to property owners in the French Quarter……...</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. The Formosan termite management program in the French Quarter is playing an important role in preserving this historical area...................</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I understand more about termite prevention methods (conditions that are conducive to termite infestations) now than I did before the program began.....................</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I understand more about the recommended treatment methods for the Formosan termite now than I did before the program began………..</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Continued educational efforts are needed in order to educate property owners about the Formosan termite in New Orleans.........................</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. The French Quarter Formosan termite management program has been successful in helping reduce the Formosan termite population in the test area of the French Quarter...</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
To what extent do you agree or disagree with each of the following:


<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. The amount of termite damage incurred on this property has been reduced due to the Formosan termite management program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. The Formosan termite management program should be expanded to eventually include all of the properties in the French Quarter.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Congress should continue to fund research efforts aimed at the control and management of the Formosan termite in the United States.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Congress should continue to fund educational efforts aimed at the control and management of the Formosan termite in the United States.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I would be willing to pay contract renewal fees to pest control operators in order to maintain yearly termite protection on my property.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Please indicate the extent to which you feel the following items are important with regards to their association with infestations of Formosan termites.

<table>
<thead>
<tr>
<th></th>
<th>Not Important</th>
<th>Low Importance</th>
<th>High Importance</th>
<th>Very High Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Wood-to Soil Contact</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Trees in the Landscape</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Mulch/ Flowerbeds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Moisture sources (leaky roofs, gutters, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Common Walls….</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Vegetation/ vines on walls…</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. Construction methods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Please indicate your *degree of satisfaction* with each of the following aspects of the Formosan Termite management program in the French Quarter.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>The service you received from your <strong>Pest Management Professional</strong> …..</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>The educational information received from the <strong>LSU Agricultural Center</strong>…</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>The service received from the <strong>LSU Agricultural Center</strong> with regards to the Formosan Termite program ……..</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22.</td>
<td>The overall results of the Formosan Termite management program in the French Quarter ………</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
23. How long do you think it would take for an infestation of Formosan termites to cause structural damage to a building?

___ Less than one month
___ 1 to 3 months
___ 3 to 6 months
___ 6 months to a year
___ Longer than a year

24. Can you tell the difference between an ant and a termite?

___ Yes
___ No
___ Not sure
25. How much do you believe a Pest Control Operator would charge for a properly applied liquid barrier treatment on an average (1800-2000 sq. foot) home?

___ less than $250
___ $250-$500
___ $500-$1000
___ over $1000
___ over $2000

26. How long do you think a properly applied liquid barrier termite treatment will protect a structure (if applied today)?

___ one year
___ five years
___ more than five years but less than ten years
___ more than ten years but less than twenty years
___ more than twenty years

27. After a pest control company treats your home for termites and issues a contract to you for this work, you may be assured that termites will not return.

___ Yes
___ No
28. One thorough termite treatment by a pest control operator will prevent termites from ever returning to your building.

___ Yes

___ No

29. Does a standard termite contract issued by a pest control company cover damage caused by the termites?

___ Yes

___ No

30. In general, which form of termite treatment do you consider to be most effective?

___ Liquid barriers

___ Baits

31. Formosan termites are subterranean termites.

___ True

___ False
32. Formosan termites can cause a great amount of damage in a short period of time.

___ True
___ False

33. What time of the year are native subterranean termites most likely to swarm?

___ January to March
___ May to June
___ August to October

34. What time of the year are Formosan termites most likely to swarm?

___ January to March
___ May to June
___ August to October
Please indicate the extent to which you feel each of the following sources of information is important to you with regards to information on Formosan termites and their management:

<table>
<thead>
<tr>
<th>Source</th>
<th>Not Important</th>
<th>Low Importance</th>
<th>High Importance</th>
<th>Very High Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. The Times Picayune newspaper</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36. LSU Agricultural Center – Cooperative Extension and Research</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>37. USDA/ Agricultural Research Service</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>38. Pest Management Companies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>39. The Internet (sites other than the above)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>40. Radio</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>41. Television</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
42. What is your gender?
   ___ Male
   ___ Female

43. Please indicate your age on your last birthday.
   ___ 24 or younger
   ___ 25-34
   ___ 35-49
   ___ 50-59
   ___ 60 or older

44. Your level of education is:
   ___ High School
   ___ High School Diploma or equivalent
   ___ Some college
   ___ Associate degree (2-year degree)
   ___ Bachelor degree
   ___ Masters degree
   ___ Doctoral degree
   ___ Professional degree (MD, DVM, JD, DD)
45. Do you:

___ Own and reside at the property in the study.

___ Own, do not reside at, but rent out all of the property in the study.

___ Own, reside at, and rent out a portion of the property in the study.

___ Manage this property for the owners.

46. Is the primary use of this property:

___ residential

___ commercial (office/ professional)

___ business (retail)

___ government

___ both residential and commercial

___ both residential and business

47. How many years have you owned the property in the French Quarter termite test area? ________ year(s)

48. If you manage this property for others, how long have you managed this property?

________ year (s)
French Quarter Formosan Termite Management Program- Phase I
New Orleans’ French Quarter Termite Management Program
Cooperating Agencies:

LSU AGRICULTURAL CENTER
USDA- SOUTHERN REGIONAL RESEARCH CENTER
NEW ORLEANS MOSQUITO AND TERMITE CONTROL BOARD
23. How long do you think it would take for an infestation of Formosan termites to cause structural damage to a building?

___ Less than one month
___ 1 to 3 months
___ 3 to 6 months
___ 6 months to a year
___ Longer than a year

24. Can you tell the difference between an ant and a termite?

___ Yes
___ No
___ Not sure

25. How much do you believe a Pest Control Operator would charge for a properly applied liquid barrier treatment on an average (1800-2000 sq. foot) home?

___ less than $250
___ $250- $500
___ $500-$1000
___ $500-1000
___ over $1000
___ over $2000
26. How long do you think a properly applied liquid barrier termite treatment will protect a structure (if applied today)?

___ one year

___ five years

___ more than five years but less than ten years

___ more than ten years but less than twenty years

___ more than twenty years

27. After a pest control company treats your home for termites and issues a contract to you for this work, you may be assured that termites will not return.

___ Yes

___ No

28. One thorough termite treatment by a pest control operator will prevent termites from ever returning to your building.

___ Yes

___ No

29. Does a standard termite contract issued by a pest control company cover damage caused by the termites?

___ Yes

___ No

30. In general, which form of termite treatment do you consider to be most effective?

___ Liquid barriers

___ Baits

(Both answers are considered correct)
31. Formosan termites are subterranean termites.
   ___ True
   __ False

32. Formosan termites can cause a great amount of damage in a short period of time.
   __ True
   ___ False

33. What time of the year are native subterranean termites most likely to swarm?
   ___ January to March
   __ May to June
   ___ August to October

34. What time of the year are Formosan termites most likely to swarm?
   ___ January to March
   __ May to June
   __ True
   ___ August to October
APPENDIX E

REMINDER POSTCARD
July 28, 2003

Dear French Quarter property owner or manager,

Two weeks ago, a survey was mailed to you regarding the Formosan Termite Management Program in the French Quarter. Your response to this survey is extremely important. If you have not yet completed the questionnaire, please take a few minutes to do so and return it to us in the postage paid envelope. If you have misplaced the survey, please contact me and I will be happy to send you another one. Once again, your response to the survey is very important. If you have already returned your survey, as many of you have, my sincerest thanks.

Alan Morgan
Department of Entomology
LSU Ag Center  225-578-2180
amorgan@agctr.lsu.edu
APPENDIX F

SECOND MAILING LETTER
Dear French Quarter property owner or manager,

Enclosed is another copy of a survey that was mailed to you a few weeks ago regarding the Formosan Termite Management Program in the French Quarter. Your response to this survey is extremely important and will help to determine the future of the program. If you have not yet completed the questionnaire, please take a few minutes to do so and return it to us in the postage paid envelope. If you have any questions concerning the survey, please don’t hesitate to call me. Once again, your response to the survey is very important. If you have already returned your survey, as many of you have, my sincerest thanks.

Alan Morgan
Department of Entomology
LSU Ag Center 225-578-2180
amorgan@agctr.lsu.edu
APPENDIX G

FINAL MAILING LETTER
August 25, 2003

During the last two months I have sent several mailings about an important survey that is being conducted with the participants of the French Quarter Formosan Termite management program.

This survey is extremely important to accurately assess participants’ views, thoughts and perceptions of various aspects of the program. This feedback will be used to help us improve the program in future expansions.

The survey is drawing to a close, and because this is so important, I am contacting you one final time concerning this matter.

I am sending this final survey to you with the hope that if you have not already done so, you will complete the questionnaire and return it in the postage-paid return envelope provided. Hearing from everyone that is participating in the termite management program helps assure that the survey results are as accurate as possible.

I also want to assure you that your response to this study is completely confidential. No responses can be matched and reported with names or addresses.

Finally, I appreciate your willingness to consider my request as this survey is concluded. Your response to the questionnaire and participation is very important and I hope that you will take a few minutes to respond. Thank you very much.

Sincerely,

Alan Morgan
Associate Professor
Department of Entomology
LSU Agricultural Center
APPENDIX H

PARTICIPANTS’ PERCEPTIONS OF IMPORTANCE AND EFFECTIVENESS OF, AND SATISFACTION WITH THE FRENCH QUARTER FORMOSAN TERMITE PROGRAM
TABLES OF FREQUENCY DISTRIBUTIONS
Table H-1
Participants’ Perceptions of Importance and Effectiveness of the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
<th>U</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Formosan termite is a substantial threat to property owners in the French Quarter.</td>
<td>2</td>
<td>3</td>
<td>14</td>
<td>140</td>
<td>0</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>1.9</td>
<td>8.7</td>
<td>88.1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>The Formosan termite management program in the French Quarter is playing an important role in preserving this historical area.</td>
<td>1</td>
<td>4</td>
<td>34</td>
<td>119</td>
<td>1</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>.6</td>
<td>2.5</td>
<td>21.4</td>
<td>74.9</td>
<td>.6</td>
<td>100</td>
</tr>
<tr>
<td>The French Quarter Formosan termite management program has been successful in helping reduce the Formosan termite in the test area of the French Quarter.</td>
<td>2</td>
<td>6</td>
<td>30</td>
<td>106</td>
<td>15</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>3.8</td>
<td>18.9</td>
<td>66.6</td>
<td>9.4</td>
<td>100</td>
</tr>
<tr>
<td>The amount of termite damage incurred on this property has been reduced because of the Formosan termite program.</td>
<td>3</td>
<td>10</td>
<td>52</td>
<td>81</td>
<td>13</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>1.9</td>
<td>6.3</td>
<td>32.7</td>
<td>50.9</td>
<td>8.2</td>
<td>100</td>
</tr>
<tr>
<td>I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property.</td>
<td>6</td>
<td>8</td>
<td>82</td>
<td>31</td>
<td>30</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>3.8</td>
<td>5.1</td>
<td>52.2</td>
<td>19.7</td>
<td>19.2</td>
<td>100</td>
</tr>
</tbody>
</table>

Note. SD = Strongly Disagree, D = Disagree, A = Agree, SA= Strongly Agree, U = Undecided.
Table H-2  
Participants’ Perceptions of Satisfaction with the French Quarter Formosan Termite Program

<table>
<thead>
<tr>
<th>Item</th>
<th>VD</th>
<th>SD</th>
<th>SS</th>
<th>VS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>The service you received from your pest management professional</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td>158</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.2</td>
<td>11.4</td>
<td>47.4</td>
<td>100</td>
</tr>
<tr>
<td>The educational information received from the LSU AgCenter</td>
<td>n</td>
<td>5</td>
<td>16</td>
<td>74</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>3.1</td>
<td>10.1</td>
<td>46.5</td>
<td>40.3</td>
</tr>
<tr>
<td>The service you received from the LSU AgCenter with regard to the Formosan termite program</td>
<td>n</td>
<td>3</td>
<td>16</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>1.9</td>
<td>10.1</td>
<td>44.0</td>
<td>44.0</td>
</tr>
<tr>
<td>The overall results of the Formosan Termite management program in the French Quarter</td>
<td>n</td>
<td>0</td>
<td>9</td>
<td>54</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0</td>
<td>5.6</td>
<td>34.0</td>
<td>60.4</td>
</tr>
</tbody>
</table>

*Note. VD = Very Dissatisfied, SD = Somewhat Dissatisfied, SS = Somewhat Satisfied, VS = Very Satisfied.*
APPENDIX I

FRENCH QUARTER FORMOSAN TERMITE PROGRAM
PARTICIPANTS’ PERCEPTIONS OF PROGRAM IMPORTANCE
AND EFFECTIVENESS
Table I  
French Quarter Formosan Termite Program Participants’ Perceptions of Program Importance and Effectiveness

<table>
<thead>
<tr>
<th>Item</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Formosan termite is a substantial threat to property owners in the French Quarter</td>
<td>3</td>
<td>4.99</td>
<td>.002</td>
</tr>
<tr>
<td>2. The Formosan termite management program in the French Quarter is playing an important role in preserving this historical area</td>
<td>3</td>
<td>.455</td>
<td>.714</td>
</tr>
<tr>
<td>6. The French Quarter Formosan termite management program has been successful in helping reduce the Formosan termite population in the test area of the French Quarter</td>
<td>3</td>
<td>1.280</td>
<td>.283</td>
</tr>
<tr>
<td>7. The amount of termite damage incurred on this property has been reduced because of the Formosan termite management program</td>
<td>3</td>
<td>2.255</td>
<td>.084</td>
</tr>
<tr>
<td>11. I would be willing to pay contract renewal fees to pest control operators to maintain yearly termite protection on my property</td>
<td>3</td>
<td>3.727</td>
<td>.013</td>
</tr>
<tr>
<td>19. The service you received from your pest management professional</td>
<td>3</td>
<td>1.880</td>
<td>.135</td>
</tr>
<tr>
<td>20. The educational information received from the LSU AgCenter</td>
<td>3</td>
<td>1.081</td>
<td>.359</td>
</tr>
<tr>
<td>21. The service received from the LSU AgCenter with regard to the Formosan Termite program</td>
<td>3</td>
<td>.933</td>
<td>.426</td>
</tr>
</tbody>
</table>
VITA

The author was born August 27, 1953, in Crowley, Louisiana and is the son of Thurman and Audrey Morgan. He graduated from Alexandria Senior High School in 1971 and completed the requirements for a Bachelor of Science Degree in entomology from Louisiana State University in 1975 and a Master of Science Degree in 1994.

He was employed with the Louisiana State University Agricultural Center from November 1975 until January 1980 as a research associate at the LSU Research Station in Crowley, Louisiana. In 1980 he took a position with Ciba Geigy Corporation Seed Division as District Sales Manager for Louisiana and Arkansas. In 1989 he returned to the LSU Agricultural Center, working in Richland parish. In 1990 he transferred to Jefferson parish and in 1995 to Orleans parish as county agent. In 1998 he began working with the Formosan Termite Program in New Orleans and is currently an associate professor with the Louisiana State University Agricultural Center, Department of Entomology in Baton Rouge, concentrating primarily on educational and demonstration programs concerning the Formosan subterranean termite.

The degree of Doctor of Philosophy will be conferred at the December 2003 Commencement ceremony.