

**The Statewide Economic Impact of Red Imported Fire Ants in Texas:  
A Part of the Texas Fire Ant Initiative 1999-2001**

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The research was jointly conducted by Curtis F. Lard, Professor, Department of Agricultural Economics at Texas A&M University; David B. Willis, Assistant Professor of Agricultural and Applied Economics at Texas Tech University; and Victoria Salin, Assistant Professor, Department of Agricultural Economics at Texas A&M University. Other individuals on the research team included Sara Robison, graduate research assistant, Kerinne Schroeder, Brandon Hill, and Julie Jordan, undergraduate research assistants, in the Department of Agricultural Economics.

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Please direct any questions or comments concerning this report to Dr. Curtis Lard (c-lard@tamu.edu), Dr. David Willis (David.Willis@ttu.edu), or Dr. Victoria Salin (v-salin@tamu.edu).

## Abstract

The red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae) has become a major economic pest to various sectors of the Texas economy (referred to as the fire ant). In order to determine the economic costs and benefits of this pest on the state of Texas, two studies were conducted – urban and agriculture. Some of the sectors that incurred expenditures due to fire ants include single-family households, golf courses, commercial businesses, schools, and agriculture.

In 1998-1999, the estimated costs of controlling and managing fire ants in the five metroplexes of Austin, Dallas, Fort Worth, San Antonio, and Houston exceeded \$580 million. The primary data used in the statewide economic analysis were gathered through five different sector surveys. Single-family households, golf courses, schools, and cities sector data were collected during the urban study for 1998. In 1999-2000, the estimated fire ant damages and control costs to Texas agriculture exceeded \$90 million. The agriculture sector expenditures were estimated from the agriculture surveys conducted to obtain 1999 fire ant expenses. The economic impacts of fire ants for the sectors surveyed were expanded to include all affected areas of Texas, and the expenditures for other sectors not surveyed were extrapolated from the data collected in the urban and agriculture studies.

The study estimated that fire ant damages and expenditures exceed \$1.2 billion to the economy of Texas annually. The household sectors (single-family and multi-family residences) had the greatest expenditures for fire ant control and treatment with 59 percent (\$711.5 million) of all expenses. In the Texas Tech University study, the electrical and communication sector expenses were estimated to be \$146.5 million annually (Teal et al.). The agriculture sector had an estimated \$90.57 million (7.5 percent of statewide fire ant expenditures) in expenditures. The expenditures due to fire ant damages and control measures for the remaining sectors studied were estimated to be more than \$256 million.

Fire ant expenditures were estimated for two categories, treatment expenses and other item expenses. Treatment expenses included the costs for insecticide mound treatment, insecticide baits, and other “organic” treatments. Other item expenses included supplies, like gloves or repellent sprays; equipment, such as sprayers or spreaders; labor; and any professional services. Treatment expenditures accounted for 49 percent (\$518.9 million) of all expenses due to fire ants (excluding the electrical and communication sector). The multi-family household, city, airport, commercial business, church, and cemetery sectors spend an estimated 65 percent on treatment expenses for fire ants. Golf courses spent only 10.8 percent on treatments, because they had huge repair costs due to fire ant damages to irrigation systems. The agriculture sector has an estimated \$74.55 million (82 percent) in other item expenses and \$16 million (18 percent) due to treatment expenses.

The study also revealed information about location of damaged areas, respondents’ valuation of the activities curtailed by fire ants, and their willingness to pay for effective fire ant management.

## **The Statewide Economic Impact of Red Imported Fire Ants in Texas: Executive Summary**

Fire ants in Texas have a tremendous economic impact on the various sectors of the economy. This scientific study has identified and quantified many of these impacts as presented in this report. This report gives the impacts by geographic area and sector, as well as urban and rural areas.

### **Geographic Areas**

Fire ant damage in Texas is not distributed uniformly over the entire state. The statewide economic impact of fire ants was estimated by expanding the information obtained from the urban and agriculture studies across the affected counties in Texas. These surveys included urban sectors and rural sectors. The counties that are considered affected in the study include the counties in the Texas Red Imported Fire Ant Quarantine Area and seven additional counties that reported damages in the agriculture survey (Archer, Callahan, Clay, Coleman, Concho, Runnels, and Shackelford). For this study it was assumed that the counties that were not part of the affected area had no economic impact from fire ants and no damages were calculated for these 87 counties. (See Figure 1)

### **Urban Study Areas and Sectors**

The metropolitan areas included Austin, Dallas, Fort Worth, Houston, and San Antonio. The sectors included in the urban studies were schools, single-family homes, golf courses, and cities.

The overall estimated cost to the five selected metroplexes for fire ant damages and control was over \$581 million for 1998. The greatest cost in the metroplex areas was incurred by the household sector with \$526 million in damages and control, and the per household average was \$150.79. In the selected metroplexes, golf course expenditures were \$29.49 million, school expenditures were \$25.44 million, and city expenditures were \$612,453.

Survey findings were used to calculate the state total for the various sectors of the economy. The total expense of fire ant damages and costs for golf courses in Texas was \$47.3 million based on the per golf course expense of \$63,495. Based on a household average of \$150.79, the single-

family residential household sector was estimated to be \$702.4 million for the state. Because the surveys used in the study did not include multiple-family housing units, the expenditures for these units were estimated as stated below. Using the per acre expense of the closest metroplex, the multiple-family households expenditures were assumed to be the same per unit of land area as single-family households. Total multi-family household expenditures were estimated to be \$9.2 million. City expenditures that include the cities located outside the five largest metropolitan areas totaled \$1.1 million. Damages and control expenses for Texas schools were estimated to be \$42.3 million. This estimate was based upon the per school expense from the metroplex school survey. (Refer to Table 1 for statewide totals.)

### **Agriculture Study**

The economic impact of fire ant damages exceeded \$90 million for Texas agricultural producers in 1999. Fire ant damages were reported for nine damage categories as follows: crop yield losses were \$33.4 million, control costs were \$16.02 million, equipment repair costs were \$17 million, equipment costs were \$1.66 million, farmstead damages were \$9.1 million, equipment replacement costs were \$7.4 million, livestock losses were \$4.6 million, medical expenses were \$0.56 million, and veterinary costs were \$0.86 million. There is an ongoing debate concerning the existence of potential agricultural benefits from fire ant infestations. Some researchers hypothesize that fire ants prey on agricultural pests such as boll weevils and corn earworm. If this benefit can be documented, it could offset some of the damages associated with fire ants in some areas of the state. A \$1.54 million statewide benefit was derived from the ten respondents who were able to quantify the benefit value. Less than 10% of the respondents, stating that there were beneficial effects, were able to provide a dollar value. If this benefit is similar for the producers who indicated unquantifiable beneficial effects, then the overall benefit would be over \$15 million annually.

### **Analysis of Other Sectors**

Other sectors included in the economic impact of red imported fire ants are airports, cemeteries, churches, commercial businesses, institutions, nurseries, and sod producers. The greatest expenditure for these sectors was \$63.9 million for cemeteries, followed by commercial businesses with \$45.9 million. Airports had estimated expenses of \$26.6 million, and expenses for churches were estimated to be \$9.5 million. Texas nurseries and sod producers were estimated to have annual expenditures to control and manage fire ants of \$5.5 million and \$13.4 million, respectively.

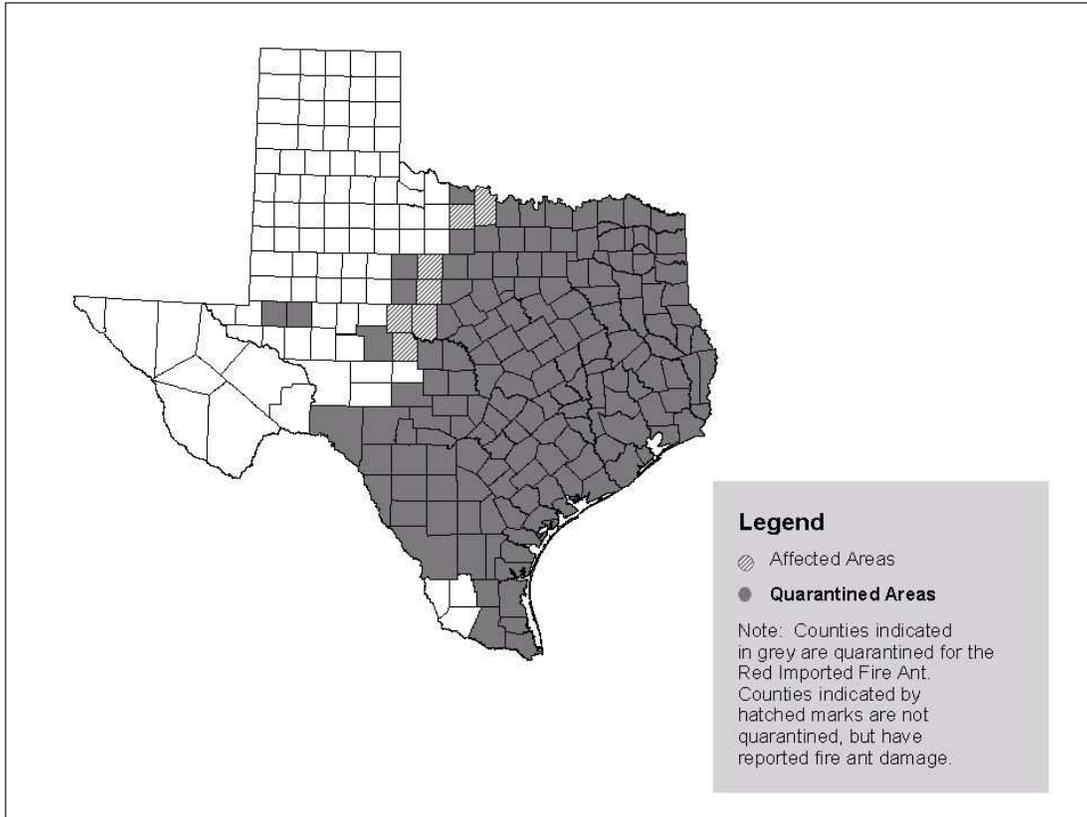
### **Electrical and Utilities Study**

A corollary study conducted by Texas Tech University (Teal et al.) examined costs associated with fire ant damages to electrical and communications equipment. That report found that fire ant related damages sustained within Texas to electrical and communication equipment totaled \$146.5 million per year. The statewide total expenses reported here include electrical and communications expenses.

### **Statewide Economic Impact**

In Texas, the total damages and expenditures from red imported fire ants, *Solenopsis invicta* Buren (Hymenoptera: Formicidae), were estimated to be \$1.2 billion on an annual basis. The costs to residential households were the greatest expense with over 50 percent of the total statewide annual costs or \$702 million. The survey results stated in this report probably underestimated the statewide costs, because not all costs were taken into consideration for several other sectors that would have significant costs due to fire ant damage and control. Sectors not taken into consideration included game and wildlife, highways, roadsides, racetracks, resorts, and theme parks. Table 1 includes the various damages and expenditures by sector of the Texas economy.

**Figure 1. Texas Fire Ant Quarantine Area and Counties with Reported Red Imported Fire Ant Damages from Agriculture Survey**



**Table 1. Annual State Total Fire Ant Damages & Expenditures by Sector for Texas**

Sector	Damages & Expenditures
1. Agriculture	\$90,572,032
2. Airports	26,620,789
3. Cemeteries	63,922,406
4. Churches	9,455,328
5. Cities	1,127,469
6. Commercial Businesses	45,898,370
7. Golf Courses	47,294,894
8. Institutions	130,793
9. Multi-family Households	9,178,695
10. Nurseries	5,524,861
11. Residential Households	702,356,668
12. Schools	42,253,421
13. Sod Producers	13,371,468
14. Electric and Communications*	146,500,000
Statewide Total	\$1,204,207,194

\* Estimate taken from Teal, S., S. E. Segarra, W. Polk. "Spatial Economic Impacts of RIFA on Selected Economic Sectors of Texas: The Electrical and Communication Equipment Case," Department of Agricultural and Applied Economics, Texas Tech University, Lubbock, 1999.