



# Texas Imported Fire Ant Research and Management Project

*Final Progress Report - October 2001*

---

## **The Statewide Economic Impact of the Imported Fire Ant on the Economy of Texas—with Special Emphasis on the Urban Areas and Crop and Livestock Production Sector**

### **Principal Investigator(s):**

Curtis F. Lard

Department of Agricultural Economics

Texas A&M University

College Station, TX 77843-2124

Phone: 979/845-4746; Fax: 979/862-1563

Email: c-lard@tamu.edu

Victoria Salin

Department of Agricultural Economics

Texas A&M University

College Station, TX 77843-2124

Phone: 979/845-8103; Fax: 979/845-6738

Email: v-salin@tamu.edu

### **Co-Investigator:**

John Ellis

Department of Agricultural Economics

Texas A&M University

College Station, TX 77843-2124

Phone: 979/845-6095; Fax: 979/845-9769

Email: j-ellis@tamu.edu

### **Inter-University Investigator:**

David B. Willis

Dept. of Agricultural & Applied Economics

Texas Tech University

Lubbock, TX 79409-2121

Phone: 806/742-0277; Fax: 806/742-1099

Email: dwillis@ttu.edu

### **Goals achieved and Major accomplishments to date:**

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.

### 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.

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

<u>Sector</u>	<u>Damages &amp; Expenditures</u>
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
<b>Statewide Total</b>	<b>\$1,204,207,194</b>

\* Estimate taken from Teal, 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.

### **Relevance to the Texas Imported Fire Ant Research Ant Management Project:**

The purpose of this project was to assess the overall economic impact of fire ants on the economy of Texas and assess the economic influences of the "Red Imported Fire Ant Research and Management Project" on suppressing and controlling this concern. The results of this research will serve as a benchmark from which to measure the progress of control measures or management techniques employed by citizens, businesses, and communities as part of the Community-Wide Fire Ant Management Pilot Showcase Projects, etc.

The final statewide estimate is an annual estimate, but is derived from original and secondary data that are not all from the same year. Because fire ants are biological creatures, their effects and associated spending by consumers, businesses, and public sector authorities almost certainly vary according to the weather. Therefore, it would not be valid to say this estimate is for any one year. However, this is the best benchmark available.

**Publications submitted/published; presentations/posters presented at national technical meetings/conferences:**

Lard, Curtis, et al. "The Statewide Economic Impact of Red Imported Fire Ants in Texas: A Part of the Texas Fire Ant Initiative 1999-2001." Final Report, August 2001.

Lard, Curtis, et al. "The Statewide Economic Impact of Red Imported Fire Ants in Texas." Brochure, August 2001.

Lard, Curtis, David B. Willis, Victoria Salin, and Sara Robison. "Economic Assessments of Red Imported Fire Ant on Texas' Urban and Agricultural Sectors," Southwestern Entomologist expected publication, 2001.

Meurisse, Mark. <http://fireantecon.tamu.edu>, webpage created for distribution of research findings, March 2000.

Meurisse, Mark and Victoria Salin. "Case Study: Quantitative Methods for Analysis of Long Term Risk of Damage by the Red Imported Fire Ant: State of Texas; Household and Golf Course Sectors." Graduate Research Paper. Spring 2000.

McInnis, Rachel. "The Economic Impact of the Red Imported Fire Ant on the Homescape." Brochure, Fall 2000.

Regar, Jennifer in interview with Curtis F. Lard. "Fire Ants Cost Texans Millions," radio and television spot prepared by Agricultural Communications, April 2000.

Riggs, Nathan L., et.al. "Community-Wide Red Imported Fire Ant Management Programs in Texas." Department of Entomology, Texas A&M University, November 2000.

Salin, Victoria, Kristi H. Cleere, Jennifer Hadley, and Curtis F. Lard. "Fire Ant Damage and Control at Texas Golf Courses," Golf Course Management expected publication – Oct. 2001.

Willis, David, Victoria Salin, Curtis Lard, and Sara Robison. "An Economic Assessment of the Red Imported Fire Ant on Texas Production Agriculture." Texas Journal of Agriculture and Natural Resources, August 2001.

**Presentations:**

Salin, Victoria, Curtis F. Lard, and Charles Hall. "Economic Impact of Fire Ants on Metroplexes in Texas," Selected paper at 2000 meeting of the Southern Agriculture Economics Association, Lexington, KY, Jan. 30-Feb.2.

Lard, Curtis F., and Victoria Salin. "The Economic Impact of Fire Ants on Metroplexes in Texas," poster and handout distributed at 2000 American Farm Bureau Annual Conference, Houston, TX, Jan. 9.

Lard, Curtis F., Victoria Salin, and Paul Nester. "The Economic Impact of Fire Ants on Metroplexes in Texas," poster and handout distributed at 2000 Southern Regional Fire Ant Conference, Chattanooga, TN, Apr. 5-7.

Robison, Sara, Curtis F. Lard, and Victoria Salin. "The Economic Impact of Fire Ants on Metroplexes in Texas," poster and handout distributed at 2000 Texas Plant Protection Association Annual Conference, College Station, TX, Dec. 5-6.

Willis, David, Victoria Salin, and Curtis F. Lard. "Economic Impact of Fire Ants to Texas Agriculture, Selected paper at 2001 meeting of the Southern Agriculture Economics Association, Fort Worth, TX, Jan. 28-31.

Lard, Curtis, David B. Willis, Victoria Salin, and Sara Robison. "Economic Assessments of Red Imported Fire Ant on Texas' Urban and Agricultural Sectors," Symposium paper at 2001 Annual Imported Fire Ant Research Conference, San Antonio, TX, Feb. 28-Mar. 2.