



Texas Imported Fire Ant Research and Management Project

Final Progress Report - October 2001

A County Level Analysis of the Cost and Benefit of Implementing a RIFA Control Program to Agricultural Crop Producers and Electric Utilities in Texas

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Major Accomplishments/Findings:

A statewide data set comprised of 3,612 agricultural producers was collected and statistically analyzed to estimate annual RIFA damages to agricultural producers. The data was compiled into nine agricultural damage categories and analyzed on both a per farm, and per acre basis for the state of Texas, and each of the fifteen Texas agricultural statistics districts. The nine agricultural damage categories consist of: (1) crop losses related to RIFA, (2) livestock losses related to RIFA, (3) equipment repair costs due to RIFA (4) equipment replacement cost due to RIFA, (5) RIFA damages to the farmstead, (6) RIFA related medical expenditures, (7) RIFA related veterinary expenditures, (8) cost of RIFA control materials, and (9) special equipment purchased to apply RIFA control materials. The agricultural benefit of RIFA infestations to agricultural producers was also estimated by agricultural district. Over 37% of the surveyed farms reported RIFA damages. Statewide RIFA damages are \$91 million annually, and annual benefits are \$1.5 million. Agricultural damages are not uniformly distributed over the state and tend to be concentrated in the northeastern part of the state with 53 percent of all agricultural damages located in two northeastern Texas Agricultural Statistical Districts (districts 4 and 5-N). Per farm and per acre losses in these two districts were considerably higher than any other district in state. The highest livestock losses, on both a per farm and per acre basis are located in district 7, the Edwards Plateau region, the center of the Texas sheep industry.

The data collected from a three-wave mail survey sent to all electric producers in 11 Southeastern states (including Texas) has been statistically analyzed. After three mailings, the overall survey response rate was 38.0%, with 364 of the 959 producers responding. Slightly more than 34.2% of the responding electric producers reported that RIFA activity impacted their operation and increased their operating costs. The Texas response rate was greater than the 11 State average,

as nearly 47% of all surveyed Texas utilities responded (92 out of 192), and 55.4% of the responding Texas utilities reported that RIFA activity impacted their operation. Among Texas electric providers affected by RIFA, 76.4% of them reported that RIFA activity had increased their annual equipment maintenance cost, and 70.5% responded that RIFA increased their annual equipment repair expenditures. Somewhat surprisingly, nearly 67% of all electric producers listed employee safety as a major concern. RIFA infestations impact the reliability of the electric power system. Two-thirds (66.7%) of the affected electric producers reported RIFA activity had caused temporary power shortages in their service areas within the last year. Nearly 57% of the electric providers reporting RIFA impacts, stated that RIFA infestations have significantly increased in their service areas over the last three years. The average reported increase within these service areas was 23.4%.

Over 94.0% of the electric utilities with RIFA infestations report the effectiveness of the RIFA control technologies they employ as either ineffective (8.2%), or only somewhat effective (85.7%). Moreover, 57.8% of these electric providers report that over 25% of the areas they treat in any given year, are significantly re-infested within one year. The two most commonly used control technologies are insecticide mound treatments (used by 68.0% of the electric providers) and insecticide baits (used by 74.0% of the electric providers). Reported average annual RIFA control expenditures (includes labor time, application equipment cost, and chemical cost, but excludes all RIFA related damages) was \$11,402 for reporting firms. Due to the substantial impacts that RIFA can have on electric production and delivery cost, electric producers reported a strong willingness to increase the size of their control technology budget if an effective RIFA control technology was made available. Seventy-eight percent of all electric providers are willing to double their annual RIFA control budget if they had access to an annually applied control technology that provided nearly 100% control if annually applied. Thirty-eight percent of the producers were willing to triple their control budget to have access to such a technology. Electric producers were willing to pay even more to have access to an effective long-term biological control technology that was capable of reducing RIFA infestation levels by 90% and only had to be applied once to an infested area. Ninety-four percent of the surveyed firms would double their annual control expenditure level if such a technology was available, 60% of the firms stated they would triple their annual expenditure levels, and 20% of the firms were willing to quadruple their annual control expenditure budget.

Goals achieved:

Documented the severity of RIFA infestations on agricultural producers and electric utility producers.

Relevance/Impact of Project:

This project refined and extended previous research regarding the economic damage of RIFA to agricultural crop producers and electric utility industry within Texas. Implementation of a cost-effective statewide control program requires knowledge of the spatial distribution of the economic costs and benefits of RIFA control. These results establish a baseline snapshot of existing RIFA damages to agricultural producers and electric producers operation within Texas. Moreover, these findings will aid decision makers in targeting those regions of the state where an ambitious RIFA control program is likely to have a positive net economic benefit.

Publications:

Willis, David B., Victoria Salin, Curtis F. Lard, and Sara Robison. "An Economic Assessment of the Red Imported Fire Ant Impacts on Texas Production Agriculture". *Texas Journal of Agriculture and Natural Resource Science* (forthcoming).

Lard, Curtis F., David B. Willis, and Victoria Salin. "Economic Impact Assessment of Red Imported Fire Ant In Texas Urban and Agricultural Sectors." *Southwestern Entomologist* (forthcoming).

Lard, Curtis, Victoria Salin, David B. Willis, Sara Robison, and Kerinne Schroede. "The Statewide Economic Impact of Red Imported Fire Ant in Texas: A Part of the Texas Fire Ant Initiative 1999-2001". Department of Agricultural Economics, Texas A&M University, College Station Texas". Fire Ant Economic Research Report # 01-08, August 2001.

Willis, David B. "The Economic Impact of RIFA Infestations on the Texas Electric Utility Industry." Manuscript in progress and to be submitted to the *Texas Journal of Agriculture and Natural Resource Science*

Presentations:

Willis, David, Victoria Salin, Curtis F. Lard, and Sara Robison. "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 F., David B. Willis, Victoria Salin, and Sara Robison. "Economic Impact Assessment of Red Imported Fire Ant In Texas Urban and Agricultural Sectors." Invited paper presented at the Annual Meetings of the Southwest Branch of the American Entomological Society, San Antonio, TX., Feb. 26-28, 2001.