

# **Fire Ant Damage and Control at Texas Golf Courses**

**By**

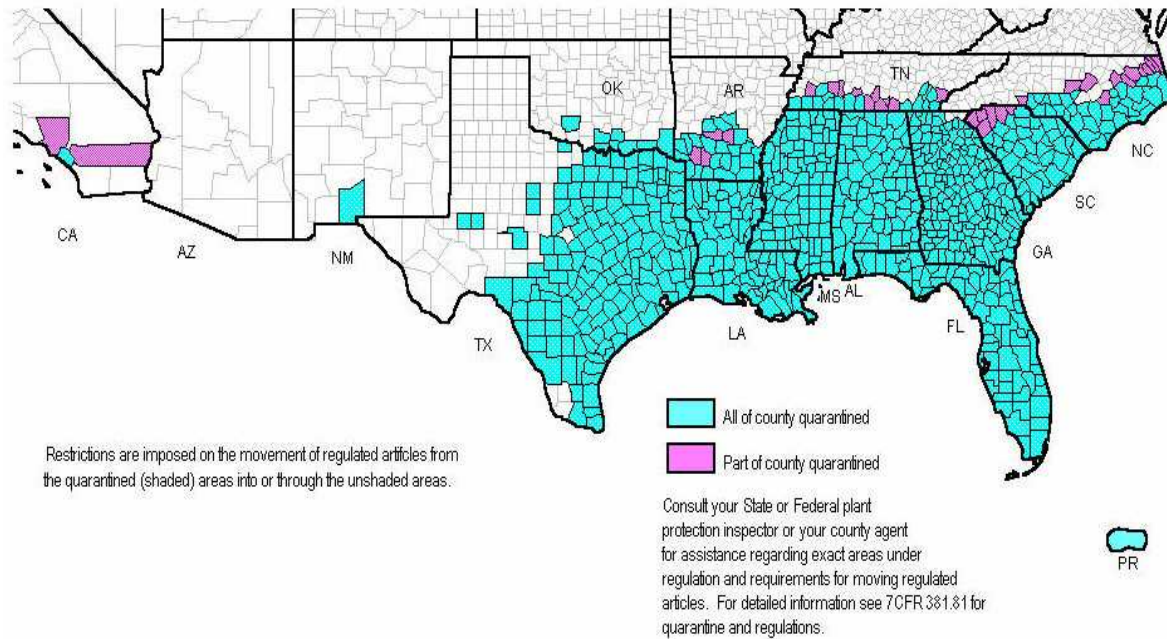
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Golfing is big business, as can be seen by the increasing number of people playing golf today. Golf course managers must provide a quality environment in order to attract patrons. Aside from the amenities a course provides, one of the biggest attractions is the condition of the course itself. Maintaining top condition in the more than 900 golf courses in Texas is challenging because of the red imported fire ant. These ants build large, unsightly mounds that interfere with regular course play unless the area is treated and restored. Fire ants attack anything that disturbs their mounds. Fire ant bites are annoying at best, and also can pose serious health hazards, in some cases. In the continuing effort to minimize problems with fire ants, golf courses incur significant expenditures for control and repair of damage.

The red imported fire ant (*Solenopsis invicta*) has moved westward at about 198 km/ year after its introduction to the U.S. in the 1930s (Vinson). It made its way into Texas in the 1950s, and has been a source of frustration for many people since then (Figure 1). In fact, Texans in five major metro areas spent \$581 million in 1998 on fire ant control and management (Lard et.al.). This figure includes expenditures by households, golf courses, cities, and schools.

In 1998, Texas golf courses spent an estimated \$30 million on fire ant control and damages in Austin, Dallas, Ft. Worth, Houston, and San Antonio, alone. Expenditures included fire ant control, equipment replacement and repair, and medical expenses directly related to fire ant infestation. Of this total, golf courses in Austin reported spending \$14.2 million, Dallas spent \$10 million, Ft. Worth spent \$1.18 million, Houston spent \$3.5 million, and San Antonio spent the least with \$0.63 million. These figures were obtained from a survey by Texas A&M

**Figure 1. Imported Fire Ant Quarantine Areas.**



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University researchers<sup>1</sup>, using quota sampling from a population of golf courses based on information provided by *Gulf Coast Golfer*. The sample results were then expanded to obtain the metro-level estimates reported above. The main objective of this research was to further identify expenditures related to the fire ant problem on golf courses in the five metroplex areas of Texas in 1998. Of particular interest were expenditures for equipment replacement and repair, fire ant control and management, and medical expenses. This was accomplished through a primary survey and statistical analysis of information gathered.

<sup>1</sup> Research was sponsored by the Texas Legislature through its support of the Texas Imported Fire Ant Research and Management Plan. A detailed summary of the findings for golf courses is found in Cleere, 1999.

There were a total of 474 courses in the survey areas in 1998: 89 in Austin, 98 in Dallas, 83 in Ft. Worth, 132 in Houston, and 72 in San Antonio. Most of the courses surveyed were 18-hole courses (57%), and approximately half were public facilities (46%).

### **Golf Course Areas Damaged by Fire Ants**

On average, reports of fire ant damage on the surveyed courses were relatively similar. The major areas of concern were electrical equipment, fairways, roughs, tee boxes, landscaping, and club houses. San Antonio golf courses reported the highest percentage of serious problems (42%). However, all of the course managers believed that fire ants were at least somewhat of a problem.

Austin reported the majority of their damage (90%) to the right-of-way areas. Dallas reported that roughs and tee boxes received the most damage (75%). Ft. Worth and Houston reported the majority of the damage (73% and 67% respectively) to electrical equipment. San Antonio reported the most damage (83%) to fairways. All of the areas surveyed, except San Antonio (91%), reported that the control of fire ants was 100% important to the livelihood of their courses.

### **Costly Equipment Damaged by Fire Ants**

The most costly expenditure, by far, for golf courses was electrical equipment replacement. This amounted to \$25.3 million, or approximately 85% of their total annual fire-ant-related expenditures. Much of this cost (\$25.1 million) was for the replacement of irrigation systems that were infested by fire ants. Fire ants are attracted to electrical currents like those used in automated irrigation systems, and infestation can cause a great deal of damage, requiring large sums of money for system replacement or repair.

Sometimes the fire ant infestation does not result in a total loss of irrigation equipment, yet repair costs are incurred. The courses surveyed spent \$1.16 million for repairs of fire ant damage in 1998. Expenditures for electrical equipment repair were most often reported. Again, irrigation equipment was the most common target of the fire ant attack. A total of \$209,045 was spent on irrigation system repair, with an additional \$17,886 spent on related issues. This figure is only slightly lower than the total electrical repair expenditure of \$234,045. Maintenance personnel completed the smaller repairs; however, larger repairs were contracted to irrigation technicians or system distributors.

Repairs to the actual course areas were even more costly than electrical repairs. Courses surveyed spent a total of \$924,887 on various repairs. Tee box repairs reportedly cost \$86,062, clubhouse repairs cost \$85,428, and landscape repairs cost \$78,011. In general, courses used their own employed maintenance personnel to repair this type of damage.

The five metroplexes surveyed reported spending a total of \$3.1 million on control and management of fire ant infestation. Treatment measures are necessary to avoid fire ant damage. Courses spent a total of \$1.18 million on routine control of fire ants. Expenditures for fairways were most significant, with an estimate of \$319,800. Treatment of roughs cost \$245,370, hardscapes cost \$242,110, and tee boxes cost \$220,004. Electrical equipment required mostly repair; therefore, the cost of treatment (\$116,252) was somewhat lower than for other areas. Golf courses spent a total of approximately 689 hours for treatment measures in the five areas surveyed. A combination of maintenance supervisors and personnel, special technicians, gardeners, and, on occasion, pest control companies performed these duties.

Materials were the most costly expenditure item in the fire ant treatment program, totalling \$961,886. Courses reported spending \$523,241 on insecticide baits and \$320,529 on individual mound treatments. Other expenditures included \$20,350 for biological controls, \$5,400 for mechanical disturbances, \$18,707 for organic materials, and \$73,459 for other

materials not specified. Additional costs were incurred for equipment purchases (\$69,417) and supplies (\$49,871).

The golf courses surveyed utilized internal maintenance personnel to perform the majority of necessary tasks. However, some reported spending an additional \$105,971 for professional pest control services.

Medical expenditures, on the other hand, were relatively minor. Courses spent a total of \$3,572 in 1998 for fire-ant-related injuries to golfers, clubhouse guests, and maintenance personnel. In the event that medical attention was required, individuals may have claimed these expenses on personal health care plans. This could explain the small degree of such expenditures by golf courses throughout the year.

In total, golf courses in the five metroplex areas spent \$29.5 million on fire ant damage and control. Replacement of irrigation systems cost \$25.2 million. Repair of damaged areas and electrical equipment cost \$1.16 million. Treatment and control expenditures cost \$3.1 million. Medical expenditures were \$3,572. Table 1 contains a complete breakdown of golf course expenditures for 1998.

**Table 1. Texas Golf Courses' Expenditures for Fire Ants in 1998.**

	Summary of Five Metroplexes	Average for an 18-Hole Course
<b>Replacement:</b>		
Irrigation Systems	\$ 25,063,977	\$169,011
Other	199,317	330
<b>Repair and Treatment:</b>		
Greens	\$ 241,171	\$302
Landscape	256,630	330
Fairways	340,284	528
Tee Boxes	306,066	589
Clubhouses	258,606	343
Hardscapes	242,110	204
Roughs	307,114	554
Pools	160,540	185
Electrical Equipment	873,697	2,208
Other	34,496	164
<b>Medical:</b>	\$ 3,572	\$13

	<b>Summary of Five Metroplexes</b>	<b>Average for an 18-Hole Course</b>
<b>Replacement:</b>		
Irrigation Systems	\$ 25,063,977	\$169,011
Other	199,317	330
<b>Repair and Treatment:</b>		
<b>Total:</b>	<b>\$28,287,580</b>	<b>\$174,761</b>

Source: Cleere, 1999.

### **Daily Activities Curtailed**

Golf courses reported the most frequent fire ant damage in the rainy months, from April to June. A majority indicated experiencing problems most often (74% of the time) within this period. However, courses reported experiencing problems only slightly less often (71% of the time) in the drier months of July, August, and September. In spite of the significant time frame in which problems occur, the majority of the courses surveyed (77%) indicated that fire ant control and management did not interfere with their daily activities.

### **Managers Choose Professional Services or In-House Labor**

Some golf courses surveyed for this research used internal maintenance personnel to treat and repair fire ant damages, while others hired professional services. Overall, golf courses spent a total of \$56,835 on internal maintenance personnel and \$49,135 on professional pest control services. The per course average expenditure for internal maintenance personnel was \$120, and per course expenditure for contracted lawn maintenance companies was \$104.

It may benefit golf course managers to take a closer look at their annual fire ant control and management expenditures, even though the labor expenditures required are relatively small. In the event that courses are spending large sums of money for internal maintenance personnel to

handle these issues, the services of contracted pest control companies could be more cost effective. This would be especially true for those courses that indicated that treatment and repair of fire ant damage actually interfered with their daily activities. In such cases, obtaining a contracted rate from outside services could save time and money in the long run. It would help keep maintenance personnel focused on the daily tasks of routine course upkeep, and prevent courses from spending large sums of money on treatment supplies and equipment.

## **In Conclusion**

While the red imported fire ant is not yet a nationwide pest, its presence throughout most of the Southern United States poses problems for golf course managers. Golf courses contain extensive turfgrass habitat for fire ants, combined with expensive electronic irrigation equipment that is at risk for costly damage. Recent survey findings show the high dollar cost in 1998 for Texas golf courses. The total expenditures by golf courses in the five metroplex areas of Texas was \$29.5 million on fire ant damage and control. By far the largest single expenditure item was replacement of irrigation systems, at \$25.2 million in 1998. In the effort to prevent such large damages, golf course managers spent \$3.1 million in 1998 for treatment and control. These findings, from the only original survey on the burden of fire ants for golf courses, point to the severity of this pest and the importance of understanding effective control methods.

The Texas Agricultural Extension Service identifies the fire ant as “the single most prolific pest in turfgrass” (Lennon). “They have been characterized as having a propensity to move, [and] a preference for disturbed habitats...” (Vinson). It is no surprise then, that golf courses seem to attract these pests in such large numbers. The Texas Agricultural Extension Service, Texas A&M University, as well as other agencies and universities, have devoted a great deal of time and money toward research that might lead to better methods of fire ant control and

management. The results reported here are a first step in understanding the scope of the fire ant problem in order to improve research programs that will lead to better management of these pests on golf courses in the future.

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