



Fire Ant Trails: News from the Texas Imported Fire Ant Research & Management Plan

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PEER REVIEW COMMITTEE: EXECUTIVE SUMMARY

The Peer Review Committee continues to be impressed with the scope, organization and administration of the Texas Imported Fire Ant Research and Management Plan. This program has tapped into a deep pool of highly talented scientists and extension agents from within the state (and elsewhere), and productivity has generally been excellent. In many respects, this project is a showcase for this talent, and it remains a model for research and implementation of management strategies for this insect.

The Panel members agreed that an appropriate balance between fundamental and applied research has been reached and, as such, the shareholders in this endeavor are positioned to reap benefits in both the short- and long-term. In this respect, the projects are addressing the stated goals of the research and management initiative. The potential application of results from more fundamental projects varies. In some cases, the returns from fundamental research are being realized or are eminent. For example, based on their study of the relationship between Phorid flies and fire ants, Gilbert's group at UT has established criteria for the selection and rearing of effective parasitoids for *Solenopsis invicta*. Similarly, research on the hormonal regulation of caste development is progressing well and should provide numerous points of entry for development of control agents. For other projects however, the generation of technology with potential utility for managing fire ants appears less likely. The Review Panel recommends a careful reappraisal of projects that, despite continual funding for six years, show little or no promise of tangible returns.

In its 1999 report, the Peer Review Committee wrote that "a major shortcoming continues to be a lack of communication among researchers." The current Committee noted examples of excellent interdisciplinary and interdepartmental collaboration among participants. In some cases, this involved the transfer of needed technology from laboratories into the field. For example, a host of procedures optimized by researchers from across the State have found immediate application by the Texas Department of Agriculture in its quarantine and monitoring program. This effort illustrates the importance of such cooperation among participants, and underscores the immediate utility of some of the findings of this Program. The Committee recommends that such collaborations be encouraged. In other instances, it was difficult to ascertain the level of communication among scientists within the large, subject areas. Often, there was no indication (either from the presentations or the progress reports) that scientists listed as co-PIs on projects ever communicated with one another. For example, Vargo is listed as a co-PI on the antennal physiology project yet there is no suggestion that he is involved either directly or indirectly. The panel agreed that this project would benefit greatly by collaboration with a biologist. Finally, it was apparent from the lively discussion among researchers at the end of the presentations that there had been little or no crosstalk concerning their findings. This is regrettable as participants in this Initiative from different disciplines have much to offer one another in terms of different perspectives on their research. The Panel recommends that communication within and between established disciplinary groups be further encouraged.

Finally, the Extension efforts associated with this Initiative continue to be excellent. One of the great strengths of the Texas Imported Fire Ant Research and Management Project is its visibility and availability to public scrutiny. Successful implementation of community-wide strategies for fire ant management have served as outstanding demonstrations that fire ants can be managed over a large area, resulting in less pesticide used and greater consumer satisfaction. The Panel commends efforts to expand outreach to additional groups, including children (the new Kidzants program), non-English speaking clientele (video and fact sheet in Spanish), and organic gardeners (new fact sheets and an Organic Two-Step method). The success of this aspect of the Program is reflected by increased use of the web page and the fact that educational resources developed in Texas have been used throughout the fire ant infested area. The Panel suggests that these efforts be continued. Further, the infrastructure established during the past 6 years will facilitate expansion of the community-oriented educational programs to include a more holistic approach to managing urban landscapes. Other suggestions are to increase efforts to evaluate the specific impact of products released and programs that have been implemented. For example, the level of knowledge of fire ants in various stakeholder groups within the quarantine area, in the counties on the leading edge of the infestation, and in the non-infested counties might be evaluated to determine what other types of educational programs are needed.

Respectfully submitted by the Texas Imported Fire Ant Peer Review Committee,

Arthur Appel
Kathy Flanders
Jim Ottea, Chairman

ADDENDUM from Peer Review Committee member at large, Dr. Robert Taylor, Agricultural Economist, Auburn University: I have reviewed the Fire Ant project material you sent me. The economics research done on the project is excellent and provide considerable information useful to policy makers and others involved in fire ant management. The only surprise to me is that,

since the last review, there did not appear to much new economic research. Perhaps this was planned. But overall, I think the economic components to the project have made substantive, important contributions.

EXISTING TECHNOLOGY COULD SAVE TEXANS \$313 MILLION!

Bastiaan “Bart” M. Drees, Director,
Texas Imported Fire Ant Research and Management Project

The Texas Imported Fire Ant Research & Management Project has funded research, regulatory and education programs annually since 1998 (Drees and Frisbie 2002). After 6 years of state funding at \$2.5 million per year (\$15 million, total), people expect to see results. What has been accomplished?

During this time, much progress has been made addressing the Project’s goal of eliminating the red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae) as a pest of major economic and health significance (see “[Red Imported Fire Ant Highlights 1997-2003](#)” on the project’s web site, <http://fireant.tamu.edu>). Great returns are possible from research investments into the areas of biological, physiological or genetic methods of fire ant control. However, the longer-term goal of the Texas Fire Ant Project - sustainable suppression of red imported fire ants - may still be years away. Many of the scientific discoveries being made now will not appear in scientific journal articles for 1 to 2 years from now and may take even longer to be implemented!

One of the most publicly visible components of the project has been the demonstration of the concept of managing fire ants on a community-wide basis - even though funding has been restricted by the policy that no project funds could be used to buy or apply pesticides (i.e., no pesticide give-away programs).

Community-wide fire ant management programs work. “Pilot showcase” programs conducted (using donated insecticide products or those purchased by residents) by our special “fire ant agents” (official title: Extension Agents - IPM, Fire Ant Project) demonstrated that this approach can reduce the cost of

pesticides people had been buying and applying to try control the ants on a property-by-property basis by 84% (from \$35.82 to \$5.86 per property per year)(Riggs et al. 2002).

A Scripps & Howard survey (see [Fire Ant Trails 3\(5\)](#)) documented that 70% of Texans surveyed use fast-acting contact insecticides, like mound treatments to control fire ants. The approach predominantly used in these demonstration efforts was “Two-Step Method” of fire ant control (see publications [B-6043](#) and [L-5070](#)) which relies on the broadcast application of an effective ant bait product, followed by selective individual mound treatment only when necessary.

Bait-formulated insecticides are much less toxic and more effective for controlling fire ants in larger areas. Promotion of community-wide fire ant management and use of the Two-Step Method could substantially reduce use and over-use of pesticides in these areas. Fire ant mound treatments are more expensive, labor intensive, use a lot of insecticide, and do not result in long-term, large-scale control of fire ants (see [B-6099](#)).

Considering that fire ants cost the five major metroplex areas in Texas (Dallas, Fort Worth, Austin, Houston, and San Antonio) \$526 million per year, and 53% of this cost (\$278.8 million) is for pesticides (see Lard et al. 2000, “[The Economic Impact of the Red Imported Fire Ant on the Homescape](#)” and 2002), implementation of community-wide fire ant management statewide could reduce the economic impact of fire ants by \$234 million. Extrapolated state-wide, savings would be about **\$313 million** ($\$702 \text{ million} \times 0.53 = \$372 \text{ million} \times 84\% \text{ reduction or } 0.84 = \313 million , from Lard et al. 2001, “[The Statewide Economic Impact of the Red Imported Fire Ant in Texas](#)”).

Demonstration versus Implementation

Grass roots approach to implementation. Texas Cooperative Extension has promoted community-wide fire ant management at the grass roots level using slogans like: “We’re all on the same team when tackling fire ants”, and “The key to fighting fire ants is working together”(see the fact sheet, [FAPFS#015](#)). The project’s agents have talked to over 105

homeowner groups (e.g., home owner associations, etc.) since 1998. Although some community-groups in Texas and elsewhere have successfully implemented this approach in their neighborhoods, the concept has not been widely adopted.

Obstacles to implementation. There are a number of obstacles that hinder implementation of community-wide fire ant management programs. Implementing a community-wide program is labor intensive, requiring an energetic volunteer (i.e., team captain) to organize treatments, collect or arrange for funds to purchase insecticide products and applicators, and deal with any problems that may arise. This obstacle has kept many groups from implementing the concept - even though everyone agrees that this is the best way to go. In addition, organizers making treatment decisions for community groups must become educated about the choices available and convince residents that the choice made is the most appropriate for their neighborhood. Finally, once fire ants have been eliminated by an initial community-wide treatment, interest in continued participation tends to decline rapidly among resident participants. Maintaining commitment (and funding) to keep the program going is a major challenge.

Furthermore, community-wide fire ant management is not totally without risk and there are lingering concerns. Once fire ants are suppressed, other ant species recover. Some of these, like Argentine ants and crazy ants (*Linepithema humile* (Mayr) and *Paratrechina longicornis* (Latreille), respectively), could theoretically become nuisance pests in and around the home, although they are less of a medical threat. In addition, no one can be absolutely certain that insecticides used will, some day, produce an unintended toxicological problem in the environment.

Other Implementation Alternatives

Master Gardener volunteers. The Fire Ant Project continues to encourage implementation at the grass roots level. A program was initiated in 2000 based on an idea suggested by State Representative Dianne Delisi (see [Fire Ant Trails 5\(1\)](#)) in Bell County. This program, coordinated by Dr.

Charles L. Barr, Extension Program Specialist for the Fire Ant Project, provides in-depth training for Master Gardening Program graduates to become “Fire Ant Specialists.” Volunteers completing this program commit to implementing community-wide fire ant management projects. This effort is entering its third year with programs ongoing in Bell, Orange and several other Texas counties. There remains great promise for this approach.

Involvement of Professional Pest Control Operators. The Texas Fire Ant Project has focused on enlisting professional pest control companies. One of the “pilot showcase projects” now published (Riggs et al. 2002) was implemented by a professional pest control company in San Antonio. The Fire Ant Project Extension staff has conducted training programs to encourage lawn care and pest control companies to add community-wide fire ant control programs to their menu of options offered to customers (see *Fire Ant Trails* 4(2) & 4(3), <http://fireant.tamu.edu/CertifiedOperators>). These training programs promoted the concept that by managing the ants on a larger area-basis, companies could gain larger contracts, but at a lower cost to individual property owners. Furthermore, clientele involved with these professionals might be more likely to employ these same companies for other pest control needs, such as cockroach and flea management services.

County- and municipality-based programs. In Bowie County, Texas, Carl Teel, Commissioner of Precinct 4, has been conducting a fire ant management program using county employees to treat yards of voluntary program participants (see *Fire Ant Trails* 2(5), 4(5) and, Teel and Barr 2002). The plan, developed with assistance by Dr. Barr, was approved by the Texas Department of Agriculture and has met with much success, although the program does not necessarily result in an entire neighborhood or community being managed as single, area-wide unit.

The Potential for Abatement Programs

Although the Texas Imported Fire Ant Research and Management Project will continue to promote and offer assistance in implementing community-wide fire ant management programs at all levels (see [B-6043](#)), the final option for wide-spread

implementation of community-wide fire ant management is the establishment of fire ant abatement districts. Mosquito control has historically been implemented using abatement districts. These require voter approval to provide tax funding for units in counties or municipalities. These organizations, then, decide what, when and how to apply insecticides to control the pests.

Recently, the mosquito-vectored West Nile Virus threat has mobilized an abatement program in Houston to treat for mosquitoes. The Harris County Commission approved more than \$900,000 to pay for insecticide and additional positions after already having sprayed by air twice in unincorporated areas, and by ground application 2 to 3 times per week (*The Bryan-College Station Eagle*, Aug. 8, 2002). This effort demonstrates the ability of municipalities to mobilize and fund local pest control efforts over large areas.

Why not fire ants? The tools to apply large-scale broadcast bait treatments currently exist. Descriptions for modifications needed to apply ant bait products by air are on the project’s web site under “Management”, entitled “Broadcast Application Guide” and a prototype truck-mountable “bait blower” capable of treating neighborhoods by driving down the street at 10 to 30 miles per hour has been developed (Drees and Frisbie 2002).

Will implementation of community-wide fire ant management or abatement programs be realized? This would be a decision for local, county or state political leaders to bring to a vote by their constituents. In Texas, fire ants have been estimated to cost \$150.79 per household, of which \$66.34 was spent for treatment (Lard et al. 2000, “[The Economic Impact of the Red Imported Fire Ant on the Homescape](#)” and 2002). Abatement programs could dramatically reduce the amount of money people are currently spending to do their own fire ant control. A vote for fire ant control cannot only save people money, but also reduce pesticide use in our environment, and virtually eliminate costly fire ant problems in large areas like neighborhoods, cities and even counties.

If the state of Texas could save up to \$313 million annually by implementing community-wide fire ant management in urban areas, it would realize approximately a 95% return from the investment of \$15 million into the 6 years of supporting the

Texas Imported Fire Ant Research and Management Project - not counting the potential savings from other research advances made with support from this project to be realized in the future!

**Texas Imported Fire Ant Research & Management Project
FY2004-2005
REQUEST FOR PRE-PROPOSALS:
PROPOSED GUIDELINES**

Literature cited:

Drees, B. M. and R. E. Frisbie. 2002. Overview of the Texas Imported Fire Ant Research and Management Project (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:1-6.

Lard, C. D. B. Willis, V. Salin, and S. Robison. 2002. Economic assessments of red imported fire ant in Texas' urban and agricultural sectors (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:123-137.

Riggs, N. L., L. Lennon, C. L. Barr, B. M. Drees, S. Cummings, and C. Lard. 2002. Community-wide red imported fire ant programs in Texas (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:31-42.

Teel, C., L. Remer, C. L. Barr and E. Lum. 2002. Bowie County, Texas, Precinct 4 Imported Fire Ant Management Initiative Texas (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:43-46.

ARE FIRE ANTS “SOMEBODY ELSE’S PROBLEM?”

Results of a recent unscientific, voluntary “Fire Ant Survey” (see *Fire Ant Trails 4(5)*) on the project’s web site, <http://fireant.tamu.edu> compiled by Rody Best in February 2002 (see **Table 1**), indicate that people answering the survey seem to consider the imported fire ant as being more severe further away from their lawns. Are fire ants “somebody else’s problem?”

Table 1. On a scale from 1 to 5 (1 - None, 5-Very Severe), how would you describe the fire ant problem in:

Rating	Your lawn	Your neighborhood	Your city	Your state
1	7.8%	3.8%	2.7%	2.3%
2	15.9	9.4	5.4	2.7
3	33.2	37.4	36	18.2
4	26.5	30.9	36.8	36.4
5	16.6	18.5	19	40.3

As the Texas Imported Fire Ant Research and Management enters its forth biennium, research, education and regulatory efforts continue to focus more closely on potentially high impact areas and deliverable technology. Targeted areas for funding in FY2004-2005 are listed below. A pre-proposal process will be used as in the past, due by close of business on Friday, January 24, 2003. A suggested cap of \$200k/year for FY2004-2005 will be imposed for all research proposals. As approved by the Texas Imported Fire Ant Research and Management Account Advisory Committee (FARMAAC), a single review panel will evaluate all pre-proposals.

Pre-proposals containing the following elements will be given high priority for full proposals:

- Those containing a proposed time-line for transfer or implementation of new technology, and with the highest probability of achieving the goal of the Texas Fire Ant Project (i.e., eliminate the red imported fire ant as a major pest of economic and health significance)
- Those with a clearly high prospect for leveraging Fire Ant Project Funding with outside institutions, both public and private
- Those with appropriate collaboration between participating institutions (Texas Agricultural Experiment Station, Texas Cooperative Extension, Texas Tech University, University of Texas, Texas Department of Agriculture and other in-state and out-of-state institutions)

High priority research areas:

- Investigations of biological control agents, mass-reared and released for augmenting suppression of red imported fire ants (i.e., phorid flies, *Thelohania* and others); establishing and monitoring biological control nurseries; and assessing biological control impact
- Investigations of physiological processes

and behaviorally-modifying chemicals that can lead to new control or suppression and delivery technologies

- Investigations of genetic/genomic mechanisms and transformation systems that can lead to eliminating red imported fire ants
- Investigations addressing regulatory issues such as developing treatment programs for shipping fire ant free articles (i.e., bee hives, hay bales, sod, nursery stock); and surveys for red imported fire ant spread
- Development, implementation and evaluation of integrated pest management (IPM) systems for agricultural commodities and wildlife areas
- Marketing and promotion through Agricultural Communications groups

Per-proposals should be sent to B. M. Drees, Director, Texas Fire Ant Project.

**PRE-PROPOSAL OUTLINE FOR
FY2004-2005 COMPETITIVE GRANTS
PROGRAM (4-page, maximum)**

- Title of project
- Lead principal investigator and contact information
- Title of project:
- Abstract
- Background information
- Hypothesis/Objectives/Proposed Work/Methods and Materials
- Expected outcome/Products/Management Tools or Approaches
- Time line (for work to be done and anticipated technology transfer/implementation)

- Relevance to the Texas Imported Fire Ant Research and Management Plan (available to view on <http://fireant.tamu.edu> underneath the project logo in the right hand column of the home page)
- Annual Budget: Use two columns, one for FY2004 and one for FY2005
- Outside/Leveraged Related Funding:



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