

Texas Imported Fire Ant Research and Management Project Annual Progress Report



Title of project: Fire Ants: The Honey Bee's Friend AND Foe?

Principal investigator and contact information:

Tanya Pankiw,
Department of Entomology, Texas A&M University, College Station, TX 7843-2475 Ph
979-458-0837 Fx 979-845-6305 Email tpankiw@tamu.edu

Major accomplishments to date:

1. Data analysis of the Texas Imported Fire Ant Research and Management Project Beekeeper Survey of 2005 is complete. A brief summary of the survey results is attached. A manuscript for submission to the Journal of Economic Entomology is in preparation.
2. Butyric anhydride as a barrier to fire ants from apiaries has been shown to have excellent short-term efficacy. We have tested many slow-release delivery devices to date. Most would be too expensive for agricultural uses. We currently testing wood shavings and saw dust soaked in butyric anhydride. Wood shaving and saw dust are extremely inexpensive and wood retains butyric anhydride for long periods of time.
3. We have demonstrated that fire ants not only feed on small hive beetle pupae but also excavate beetles that have burrowed at least 8 cm into soil in the lab.
4. We have demonstrated that tea tree oil and a compound produced by queens of *Apis mellifera*, were efficacious as fire ant foraging barriers in the lab.

Relevance to the Texas Imported Fire Ant Research and Management Project:

1. Texas Imported Fire Ant Research and Management Project Beekeeper Survey of 2005

High priorities of the Texas Imported Fire Ant Research and Management Project FY 2006 - 2007 Request for Proposals Guidelines included "...sociological behaviors resulting from prolonged activities of the Texas Imported Fire Ant Research and Management Project." We surveyed Texas beekeepers in 2005 to measure some of the effects of the Texas Imported Fire Ant Research and Management Project. Beekeepers represent a wide cross-section of the population that have beekeeping in common and as such, also have important interactions with fire ants. A measure of beekeeper perceptions, practices and costs regarding fire ant impact and control is important to identify areas for education and research efforts. We were able to assess beekeeper practice patterns regarding their assessment and management of fire ants in honey bee apiaries and measure where beekeepers rank fire ants relative to honey bee diseases, parasites and pests.

Brief Summary of Survey Results

- Beekeepers perceived fire ants to be a problem but, on average, fire ants ranked among the lowest of biological problems faced by beekeepers.
- Although fire ants received a relatively low ranking as a problem, where fire ants are particularly problematic, the cost of control was high. The reported average cost of control was $\$11.13 \pm \3.41 per colony, second only to controlling Africanization of bee colonies.
- Beekeepers had little to no name awareness of the Texas Imported Fire Ant Research and Management Project.
- Beekeepers reported that the Texas Imported Fire Ant Research and Management Project had not addressed their specific needs. However, this was inconsistent with their reported fire ant control practices and ranking of fire ants as a problem.
- Name awareness was not a factor in beekeeper reported fire ant control methods recommended by the Texas Imported Fire Ant Research and Management Project.
- Although beekeepers reported using recommended fire ant control methods, they also reported using un-recommended and environmentally hazardous methods.
- The majority of beekeepers responded positively to the idea of implementing IPM strategies and that they would encourage fire ants to nest in their apiaries if fire ants were shown to control the honey bee pest, small hive beetle.
- Reported fire ant control practices indicated mixed objectives to controlling ants with reserved insecticide use to limit honey bee poisoning. Nearly 37% of beekeepers reported using physical barriers to keep ants away from colonies, or reported moving bees away from ants.
- Permanent apiary locations may be areas in which fire ant insecticide resistance may emerge as a consequence of long-term, inadequate use of insecticide. A second survey coupled with insecticide LD50 data would be the most robust measure.

2. Non-toxic alternatives to controlling fire ants has great significance to the Project because alternatives are generally not considered but important to use where insecticides are hazardous to people or other animals and as an aid to maintaining insecticide susceptibility.

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

Publication:

Pankiw T (2006) Non-toxic fire ant barriers protecting honey bee colonies. *Southwestern Entomologist* 31(1): 19-23.

Presentations:

Pankiw, T. (2005) Honey Bee Research at Texas A&M University. Texas State Beekeepers Association Annual Conference. November 11, 2005. Corpus Christi, TX.

Pankiw, T. (2005) Honey Bee Research at Texas A&M University. Ohio State University, Department of Biology. May 23, 2005. Columbus, OH.

Pankiw, T. (2005) Honey Bee Research at Texas A&M University. Western Apicultural Society. July 26, 2005. Buelton, CA

Poster:

Pankiw, T. (2005) Honey Bee Research at Texas A&M University. The Almond Board of California. Honey Bee Research at Texas A&M University. Modesto, CA. December 7, 2005. (poster)

Signature:

A handwritten signature in black ink, appearing to be 'T. Pankiw', is written over a horizontal line.

Date: September 12, 2006