

Fire Ant Initiative Action Plan – FY 2006-2007

Maximum 500 words, double-spaced, type size at least 12 points, do not exceed boundaries. Include statement on anticipated outcomes.

This proposal contains 3 studies: 1) Analysis of the Texas beekeeper survey of their perceptions of fire ant issues, 2) Fire ant control of an emerging pest of the honey bee, the small hive beetle, and 3) Test of common honey bee repellents to repel fire ants.

On July 12, 2005 a survey was sent to 230 Texas beekeepers to assess their perception of fire ants as a problem in apiculture, means of controlling fire ants and, fire ants as a predator of the emerging honey bee pest, small hive beetle. The purpose of the survey was to identify areas of emphasis for teaching safe fire ant control practices in apiaries, emerging problems faced by beekeepers, and to determine how widespread is the untested hypothesis that fire ants control small hive beetles and if beekeeper behavior is affected by this untested hypothesis. Potential outcomes include increased education efforts in fire ant control in apiaries, identification of areas for research to address beekeepers' and issues concerning fire ants. To date over ~20% of surveys have been returned. 87% of respondents believe fire ants control small hive beetles through predation on pupae in the soil and 100% of them are willing to encourage fire ants to nest in apiaries to control beetles.

It is reasonable to hypothesize that fire ants control small hive beetles, however the hypothesis is untested. The second study proposes to measure fire ant control of small hive beetles contained in flight cages. If the results of this study support the hypothesis then the outcome of this study may have serious implications for changing fire ant management practices in apiaries. Alternatively, if falsified, a publication and educational effort will be necessary to inform beekeepers that fire ants do not have an economic impact on small hive beetle control.

The third study proposes to test common honey bee repellents used in honey harvesting for efficacy as fire ant repellents and barriers. As repellents these compounds are expected to function as they do with honey bees; driving adults out of the nest, making them more vulnerable to topical pesticides, and concurrently masking alarm pheromones thereby reducing defensive stinging. To test the efficacy of honey bee repellents as a barrier, the substances will be microencapsulated and seeded around honey bee colonies. Standard measures of fire ant activity near colonies will be used to test efficacy. Repellents are generally not considered in a fire ant control program, however a repellent may be desirable in some circumstances, 1) to induce adults to abandon the nest (absconding) to drive ants out of a space thereby increasing their exposure to insecticide treatment and, 2) as a fire ant barrier. Repellents are commercially available and microencapsulation techniques are well established. Bee repellents in fire ant management have the potential to transfer to other agricultural and urban settings where adult absconding and/or non-toxic barriers are preferred.