

Potential Applications of the Response of Phorid Flies to Fire Ant Semiochemicals

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Electrical stimulation of fire ants induces them to release semiochemicals. We discovered that these semiochemicals activate resting phorid fly parasites to fly toward the odor source and then attack the ants. We have adapted the electrical stimulation system to rearing boxes to test whether or not the production of flies can be increased using this method. The results from our first attempts at improving phorid fly (*Pseudacteon tricuspis*) rearing using electrical stimulation showed the following in paired treatment/control comparisons: there were 29% more attacking flies in the treatments, which resulted in a mean increase in fly production of 19%. These first results are highly encouraging and point to the potential of this method in increasing rearing efficiency. We hope to demonstrate in the future that with this method fewer flies will have to be cycled back into rearing to achieve the desired production rate, thus providing more flies for release. A preliminary study of the effects of fire ant electrical stimulation and rearing efficiency of another phorid fly, *Pseudacteon curvatus*, also indicates production increases. These semiochemicals have great potential in phorid fly rearing and in the development of an efficient and specific trap for phorid fly detection in the field. Research to isolate and identify the active compounds is underway.