

Project Title: Initiation of Trapping and Monitoring Techniques to Identify and Determine the Pest Status of Billbugs in Arizona Turfgrass

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Final Report

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A demonstration project was initiated with certified golf course superintendent, Virgil Robinson at Prescott Lakes Golf Course, Prescott, AZ. A series of 3 pitfall traps was installed at the Prescott Lakes Golf Course in April 2007 through October 2007. Weekly inspections of the traps yielded total weekly adult billbug counts. All specimens were collected and then sent to Purdue University for identification. The adult billbugs collected at Prescott Lakes Golf Course were sent to Purdue University where entomologist, Doug Richmond identified Denver or Rocky Mountain billbug as predominant species during May to June. Few Phoenician billbugs were also identified. Billbugs collected during July to October remain to be identified.

Degree-day accumulations were collected during the trapping season. Initial increase in adults trapped was in early May. Timing of application of soil-applied insecticide was based on emergence and peak trap catches of adults as observed in pitfall traps correlated with the degree-day data. A secondary experiment was conducted to evaluate applying insecticides at variable times following observance of initial peak trap catches of billbug. Selective applications of insecticides were made on areas that had prior history of billbug turf damage. These selective site treatments were made instead of making "wall-to-wall" applications that blanketed the entire golf course. Most selective areas were around bunker faces that were south-facing. Selective treatments were a significant change in practice.

A pitfall trap was installed at Vistancia Golf Course in Peoria, AZ during the summer of 2007 for casual survey of billbug adults to introduce the trapping technique to the superintendent.

A presentation was made to golf course superintendents at one of their education seminars in September 2007. Entomologist, Kirk Smith presented information about billbug pest biology and lifecycles, population dynamics and seasonal occurrences. Virgil Robinson, Prescott Lakes Golf Course CGCS presented a peer-to-peer description of his billbug situation and practices instigated based on pitfall trap catches and monitoring program.

The production and dissemination of bulletins and other appropriate publications about billbugs was not completed and will be done in the near future to facilitate technology transfer. Fact sheets will describe billbugs' biology, phenology, and identification features to distinguish and differentiate pest species. As the identification is completed for the Prescott site adults,

definitive information will be developed further. One superintendent, V. Robinson has adopted the monitoring technique and utilized the data and correlated it to degree-day accumulations to improve timing of soil-active insecticides for billbug control.

Anticipated outputs as described in the proposal to conduct this project:

Elements of the project are to achieve the goal of developing the IPM strategy by establishing fundamental knowledge for detecting, identifying, and quantifying billbug pests.

1. Establish a billbug survey network on select golf courses at Prescott Lakes Golf Course and other sites in the Phoenix area.
2. Identify the billbug species that cause the greatest concern for desert area turf managers. Correlate the biology and lifecycles of the billbug complex with environmental/climatic conditions to enable developing action threshold levels.
3. Transmit pertinent and timely data to golf course superintendents and turf managers via internet listserv.
4. Develop appropriate IPM strategies for managing populations of the key billbug pest(s).
 - a. Construct a matrix for integrating cultural turfgrass management practices with available chemical control options.
 - b. Local knowledge of billbugs will support insecticide manufacturer label references to Cooperative Extension recommendations
5. Produce and disseminate bulletins or appropriate publications about billbugs and their management to golf course superintendents and professional turf managers.
 - a. Fact sheets to describe billbugs' biology, phenology, and identification features to distinguish and differentiate pest species.
 - b. Publications will be posted to the internet website for broader regional access.
6. Extend and transfer technology to golf course superintendents and professional turf managers to enable individual trapping and monitoring for billbugs.
 - a. Provide information to build pitfall traps and to properly establish sites to effectively trap and monitor seasonal billbug populations.
7. Conduct seminars and workshops for golf course superintendents, sports turf managers, parks and recreational facility turf managers, and landscape professionals to:
 - a. Identify billbug pest species, understand billbug pest biology and lifecycles, understand population dynamics and seasonal occurrences
 - b. Annual Summer Short Course, Turf Field Day, or Turf Management Seminars are established annual meetings to facilitate future insect pest workshops
8. Provide support for technology transfer and ensure that golf course superintendents and professional turf managers become competent in billbug pest identification and quantification so that decisions are based on sound IPM practices.