Honors Thesis Defense

Spatial Optimization of 4-Poster Feeders for Tick-Borne Disease Management

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Abstract: Amblyomma americanum, the Lone Star tick, is the predominant tick species throughout the southeast United States. Its significance as a threat to human health was not realized until recently. Recognized as an important disease vector, Amblyomma carry a serious bacteria, Ehrlichia chaffeensis, that causes human monocytic ehrlichiosis. In 1995, eleven cases of ehrlichiosis due to E. chaffeensis were identified in Faireld Glade, a retirement golf community near Crossville, Tennessee. The placement of "4-poster" acaricide feeders has been demonstrated to be a highly effective control method for eliminating Amblyomma populations. Here we formulate an economic criterion to evaluate various feeder placement scenarios within Faireld Glade that minimize infected ticks and that tend toward future projects in optimization of this system.

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