

HONORS THESIS
DEFENSE

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

James Nance
Emory University

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 Fairfeld Glade, a retirement golf community near Crossivlle, 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 Fairfeld Glade that that minimize infected ticks and that tend toward future projects in optimization of this system.

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MATHEMATICS AND COMPUTER SCIENCE
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