Experiments were conducted to explore the use of a semiochemical bait to enhance exposure of *Amblyomma variegatum* Fabricius (Acari: Ixodidae) to different formulations of the entomopathogenic fungus *Metarhizium anisopliae* (Metsch.) Sorok. (Ascomycota: Hypocreales). Initially, the relative efficacies of attraction-aggregation-attachment pheromone (AAAP), made up of o-nitrophenol, methyl salicylate and nonanoic acid in the ratio 2:1:8, 1-octen-3-ol and butyric acid, were evaluated in an olfactometer. Only AAAP and 1-octen-3-ol were found to elicit attractive responses to the tick. Simultaneous release of 1-octen-3-ol and AAAP together with CO_2 from a trap in semifield plots attracted up to 94.0 ± 6% of adult ticks from a distance of 6 m, and up to 24.0 ± 5.1% from 8 m. Formulations of *M. anisopliae* (dry powder, oil, and emulsifiable) applied within the trap baited with AAAP, 1-octen-3-ol and CO_2 resulted in high levels of contamination of the ticks attracted to the traps. However, 48 h after autoinoculation, 89.1 and 33.3% of conidia were lost in dry powder and oil formulations, respectively. Emulsifiable formulation showed least loss of propagules (17.1%). Samples of ticks attracted to the baited traps were transferred to plastic basins containing grass and maintained for 5 weeks. The experiment was conducted in rainy and dry seasons. Emulsifiable formulation gave the highest relative tick reduction in both seasons: 54.7 and 46.5% in rainy and dry seasons, respectively, followed by oil formulation (32.0 and 23.8%) and powder formulation (38.0 and 24.4%).