

Cigarette beetle biology, behavior and ecology: host preference, host use and management

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DOI: xx.xxxx/xxx.2014.xxx.xxx.xxx

Abstract

Cigarette beetle, *Lasioderma serricorne* (F.) (Coleoptera: Anobiidae) causes significant damage to durable stored commodities of plant and animal origins. In this paper we discuss host preference, host use pattern and potential for pheromone-based management of *L. serricorne*. In a study to evaluate fecundity, egg to adult survival rate, and developmental time of the *L. serricorne*, seven food sources were tested at 28°C. The highest fecundity (52.5 eggs/female) was observed in wheat flour, whereas the lowest fecundity (5.8 eggs/female) was observed in cigar tobacco. Although *L. serricorne* laid eggs in all food sources evaluated, larval and pupal survival varied among different food sources. In another study we assumed that since *L. serricorne* adults can potentially disperse between different landscapes and may feed on different hosts, understanding insects' host use pattern may help to better predict how management efforts can be modified. In this study, quantitative and qualitative differences of carbon and nitrogen isotopes and five inorganic elements (Mg, Mn, Fe, Cu and Zn) present in the insect body tissue were used to identify the dietary history of *L. serricorne*. This study showed that potential exists for delineating the food sources of *L. serricorne*, using carbon and nitrogen stable isotopes and elements like Mn. In the third study leading to mating disruption trials conducted in food and feed processing plants in South Carolina, USA, suggest that release of the synthetic sex pheromone of *L. serricorne* for mating disruption can significantly inhibit proper orientation behaviour of male beetles to females and may lead to pest population decline from mating disruption.

Keywords: cigarette beetle, mating-disruption, isotope, elements, host