

### **Plodia interpunctella and Corcyra cephalonica infestation of cricket-based flour**

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**Abstract:** The continuous population growth is raising the food demand. In this context, the interest in novel food such as insect-based products is increasing. These products could be attacked by stored product pests, including pyralid moths that are among the main pests of food industry.

The present work aims to evaluate whether cricket-based flour (CF) is susceptible to infestation by *Plodia interpunctella* (Hübner) (Lepidoptera: Pyralidae) and *Corcyra cephalonica* (Stainton) (Lepidoptera: Pyralidae).

*Plodia interpunctella* and *C. cephalonica* were reared separately on CF and on a standard diet (SD) as control. Data collected included survival and performance of emerged adults and the t-test was used to determine the statistically differences.

Results showed the ability of both species to develop on CF. Nevertheless, in both cases the number of emerged adults was significantly lower on CF, compared to SD. Diets also affected the adult dimension and determined a delay in the emergence for adults derived from larvae reared on CF. Moreover, both species showed a lower offspring produced when reared on CF.

Cricket flour has shown to be susceptible to *P. interpunctella* and *C. cephalonica* infestation, thus the protection of cricket-food products must be taken into account to avoid stored product moth damage.

### **The complex effects of the larval environment on *Aedes aegypti* as vectors**

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**Abstract:** Conditions in the aquatic environment of larvae can have profound effects on populations of terrestrial adult insects, and on the traits of individual adults that emerge from the larval environment. For mosquitoes that are important vectors, these effects on adult numbers and traits are both inherently interesting aspects of the ecology of complex life cycles, and important influences on the ability of vector populations to transmit vector-borne pathogens. Detailed studies of the effects of the larval environment of *Aedes aegypti* reveal major effects of population density of larvae and of mortality due to predation on survival to adulthood, and more subtle effects of density and nonlethal threat of predation on adult traits. These density- and trait- mediated effects are integrated to affect both population rate of change and vectorial capacity of *A. aegypti*. We present information from field and laboratory experiments on effects of density and predation on the likelihood of overcompensatory responses (=production of more adults with, vs. without, mortality) of *A. aegypti* in response to mortality of larvae. We also use sensitivity analysis of a demographic model of population growth to assess the relative importance of effects on number of survivors, development time, and size-dependent fecundity for population growth. Finally, we test for nonlethal effects of threat of predation on adult traits of size, longevity, body composition, and blood feeding that are relevant to vectorial capacity. Though both density- and trait-mediated effects can occur, it appears that effects that alter the number of surviving adults have the greatest impact on both population growth and vectorial capacity. Because overcompensation can occur in *A. aegypti*, simply imposing mortality on larvae is no guarantee of reducing adult production, and therefore no guarantee of reducing *A. aegypti* populations or vectorial capacity.

### **Different response of cerambycid and curculionid beetles (Coleoptera) to burned-Pinus densiflora forests in South Korea**

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**Abstract:** We investigated the changes in species richness and abundance of two major saproxylic beetles, such as cerambycid and curculionid beetles, along a fire severities gradient in burned-Pinus densiflora forests. The wildfire was occurred in May 5~6, 2017 and about 86 ha of forests were burned. We classified the study area according to fire severity classes, such as unburned, light, edge of light-moderate, edge of moderate-severe, and severe. For sampling of the beetles, the Lindgren multi-funnel traps were placed in each fire severity classes from March to October in 2018. A total of 34,529 beetles were collected and identified as 87 beetle species. *Xyleborinus saxeseni* (19,423 individuals) and *Xylosandrus germanus* (7,216 individuals) were dominant in every burned-pine forests, and they accounted about 77% of all collected beetles. Species richness of curculionid beetles in all fire severity classes were high compared to unburned area, while those of cerambycid beetles in the edge of moderate-severe and severe areas were high compared to others. Among burned areas, however, species compositions of two beetle families were slightly different according to fire severity classes. Some beetle species were selected as potential indicators on burned-Pinus densiflora forests.