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**Developmental stability, age at onset of foraging and longevity of Africanized honey bees (*Apis mellifera* L.) under heat stress (Hymenoptera: Apidae)**

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**Abstract**

Beekeeping with the western honey bee (*Apis mellifera*) is important in tropical regions but scant information is available on the possible consequences of global warming for tropical beekeeping. We evaluated the effect of heat stress on developmental stability, the age at onset of foraging (AOF) and longevity in Africanized honey bees (AHBs) in the Yucatan Peninsula of Mexico, one of the main honey producing areas in the Neotropics, where high temperatures occur in spring and summer. To do so, we reared worker AHB pupae under a fluctuating temperature regime, simulating current tropical heatwaves, with a high temperature peak of 40.0°C for 1 hour daily across six days, and compared them to control pupae reared at stable temperatures of 34.0-35.5°C. Heat stress did not markedly affect overall body size, though the forewing of heat-stressed bees was slightly shorter than controls. However, bees reared under heat stress showed significantly greater fluctuating asymmetry (FA) in forewing shape. Heat stress also decreased AOF and reduced longevity. Our results show that changes occur in the phenotype and behavior of honey bees under heat stress, with potential consequences for colony fitness.

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