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STINGLESS BEEKEEPING DEVELOPMENT IN NORTHEASTERN BRAZIL MAY BE IMPAIRED BY EXTREME WEATHER CONDITIONS

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RESUMO: Even though stingless beekeeping has a great potential as a sustainable development tool, the activity remains essentially informal, technical knowledge is scarce, and management practices lack the sophistication and standardization found in apiculture. Here we contributed to the further development of stingless beekeeping by investigating the long-term impact of management and climate on honey production and colony survival in the stingless bee Jandaíra (*Melipona subnitida*). We analyzed a ten year record of 155 Jandaíra colonies kept by a commercial honey producer of Northeastern Brazil. This constitutes the longest and most accurate record available for a stingless bee. We modeled honey production in relation to time, age, management practices (colony division and food supplementation) and climatic factors (temperature and precipitation), and used a model selection approach to identify which factors best explained honey production. We also modeled colony mortality in relation to climatic factors. Although the amount of honey produced by each colony decreased over time, we found that the probability of producing honey increased over the years. Colony divisions decreased honey production, but did not affect honey presence; while supplementary feeding positively affected honey production. In warmer years, the probability of producing honey decreased and the amount of honey produced was lower. In years with lower precipitation fewer colonies produced honey. In contrast, colony mortality was not affected by climatic factors, and some colonies lived up to nine years, enduring extreme climatic conditions. Our findings provide useful guidelines to improve management and honey production in stingless bees and alert that if global warming predictions are correct, honey production in drier areas of Brazil may be compromised.

Keywords: honey production, meliponiculture, stingless bees.

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