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Pollinator Interaction in Organic and Conventional Coffee in Guatemala and Pollinator Network in Surrounding Landscape

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Abstract

Guatemala is one of the main producers of coffee worldwide. In the last years has been observed that coffee crops are facing a serious crisis of decline in the production due to diseases and low service of pollination what seems to be related to the drastic effects of climate change. The latest report from IPBES has indicated that in neo-tropical and especially highly deforested areas, climate change will be the greatest threat to the diversity of bees and to the pollination service they provide. Guatemala is one of these threatened areas and the effects are already observed in coffee production. It has been demonstrated that the presence of forest areas can counteract the damaging effects of extreme environmental conditions on production of crops due that provide communities of animals and plants that can act as a buffer for environmental effects, not only for diseases but to increase production through pollination. Our main objectives are to analyse the composition of the bee community and the interaction of them in organic and conventional coffee (monocultures) and determine how the structure of the landscape and vegetation attributes can favour the diversity and network of bee communities and the pollination service they provide. Preliminary results from this study have shown that there is indeed a difference in both the amount of bees visiting coffee flowers and identity of the same in coffee under organic and forest conditions against coffee in monocultures. We also observed that though *Apis mellifera* are supply to coffee plantations, are finally the Mesoamerican native bees those who are found in major proportion visiting coffee suggesting that they have an important role in the service of pollination provided to coffee.

Keywords: Bee comunity, coffee, landscape, pollination service, pollinator network

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