

## The Ecological Effects of Xate Palm (*Chamaedorea*) Plantation Management in Relation to Plant Diversity and Plant Functional Groups

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Xate, a non-timber forest product in the Palm Family, is declining at a serious rate in Guatemala due to increased harvest for the floral arrangement industry. Guatemalans have turned to the illegal cutting of xate across the Belizean border, damaging the xate population and the forest. To alleviate these problems, Belizean NGOs have promoted the cultivation of xate in plantations.

These "plantations" are organic and actually resemble "enriched" forests since landowners retain the forest canopy. They also provide a needed secondary income. Some plantations would have been converted into *milpas* if the farmer had not found an economic use for retaining the forest canopy, therefore deterring deforestation. However, the community-level ecological effects of these plantations are unknown.

Through collaborations with Belizean farmers and community-based organizations, I assessed the difference in plant richness and diversity by comparing non-weeded understory xate plantations, weeded understory xate plantations, and adjacent secondary growth forests in western Belize. These data suggest that while the plant species richness and diversity was not significantly different between management schemes, the plant species composition did change. The non-weeded plantations appear to be regenerating better and contain more species that are similar to the forest as compared to the weeded plantations.

Therefore, while the non-weeded plantations appear to have minimal community-level ecological effects, weeded plantations may exhibit negative community-level ecological effects. Belizean NGOs will directly use these results in applying for grants to increase the number of non-weeded xate plantations among farmers.

Keywords: Non-timber forest product, plantation, xate palm, Belize, Mayan Forest, plant diversity, species richness, knowledge exchange to facilitate research

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