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“Solidarity in a competing world —
fair use of resources”

On-Farm Tree Diversity and Ecosystem Services at two Seasonally Dry Forest Sites of Nicaragua

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Abstract

The Seasonally Dry Tropical Forest (SDTF) biome receives less research attention than the tropical rain forest although its biodiversity is under greater threat. Moreover, conservation of the dry forest is crucial in ensuring the provision of numerous ecosystem services. This study aims to identify opportunities to increase/maintain biodiversity at farm level using the *circa situm* conservation approach (farm-based conservation of tree species through use) to help farmers manage forest remnants sustainably. This study was carried out in two departments of Nicaragua nested in the SDTF biome, Chinandega and Matagalpa. Analyses were conducted to quantify vegetation composition and structure in different land-use systems and compare them between sites. Additionally, an ethnobotanical study using individual interviews and focus group discussions was carried out with farmers to consider their suggestions on ways to increase tree diversity within their farms. Results revealed strong dominance of a few selected tree species by farmers within agricultural land-uses, with a preference for multipurpose species performing distinct functions (economic/ecosystem). Analysis revealed that farmers participate in different ways to preserving tree cover. Two typologies were identified: planters and protectors, according to their strategies to ensure the sustainability of trees within their farms. Farm-size, farm location and social diversity of farmers exercised direct and interactive influence on farmers' perception about tree planting. Access to seeds, as well as markets and technical knowledge (extraction, germination) were the major constraints. Seeds, saplings and wire were needed by farmers regardless of their farm-size. Potential locations suggested by small farmers (< 4 ha) to increase on-farm tree diversity pointed to patios, live-fences and stream boarders; in contrast, larger farmers (> 7 ha) mostly suggested pastures and riparian areas. This study concludes that all these factors should be taken into consideration while developing conservation trajectories for the farms located in the dry forest. Furthermore, forest resources surrounding farms could be better protected if farmers were empowered with knowledge on natural regeneration and planting materials for urgent conservation of endangered species.

Keywords: Agroforestry, *circa situm* conservation, farmers' perception, Nicaragua