



Taxonomic diversity of woody species from 6 agroforestry systems in two sites with a different agricultural development in Nicaragua

Willan J Caicedo, Geovana Carreño - Rocabado, Jenny C Ordoñez, Bryan Finegan, Miguel Cifuentes and Eduardo Somarriba

CATIE – Programa de Cambio Climático y Cuencas, Costa Rica

Abstract

The continued loss of biodiversity affects ecosystem functioning and reduces provision of key ecosystem services. With an ever increasing land area devoted to agriculture, assessing the biodiversity value of different agricultural systems is becoming a priority issue to develop strategies that maintain biodiversity in agricultural landscapes. This study was carried out in the central-northwest part of Nicaragua, in two sites in the municipalities of El Tuma - La Dalia and Waslala -that exemplify different state of agricultural development- and 90 farms ($n=45$ per site). We assessed the taxonomic diversity and composition of the woody species that are present in six land uses under agroforestry (coffee = CF, cocoa = CC, live fences = CV, basic grains = GB, pastures = PA and patios = PT). An inventory of all woody species with a diameter > 9.9 cm was carried out in 171.6 ha through different sampling units according to the land uses assessed. The floristic similarity between the two study sites according to the Bray – Curtis index was 60%, with 144 shared species. The species rarefaction curves showed higher total species richness in Waslala than in La Dalia. In addition there were marked differences in species richness by land use in each of the sites evaluated, as well as significant differences ($p < 0.01$) for species richness ha^{-1} and for diversity indexes H' and D' . Finally, we also found an interaction between agricultural land use and site (analysis of variance $p < 0.05$). Species richness at the landscape level is different both by sites and by land uses, while the species richness ha^{-1} and plot diversity was only different by land use, evidencing a change in the relative importance of land uses for diversity values in every place.

Biography

Ecuadorian origin graduated in 2013 as a Zootechnical Engineer from the Polytechnic School of Chimborazo, Riobamba - Ecuador. In his engineering thesis he made the evaluation of silvopastoral alternatives that contribute to reduce the environmental impact of livestock activity in the Ecuadorian Amazon at the National Institute of Agricultural Research (INIAP). He participated in programs such as the Multinational Exchange for Sustainable Agriculture in the US for 8 months in 2012. He worked in 2011 and 2013 as an assistant technical researcher in SAFs at the INIAP Central Experimental Station of the Amazon, which allowed me to participate in research studies under the Sustainable Agroforestry project in the Ecuadorian Amazon CATIE - INIAP - Ecuador.

[Annual Congress on Advances in Biotechnology](#) | Paris, France | February 17-18, 2020

Citation: Willan J Caicedo, Taxonomic diversity of woody species from 6 agroforestry systems in two sites with a different agricultural development in Nicaragua, Costa Rica, Biotechnology Summit 2020, Annual Congress on Advance in Biotechnology, Paris, France, 17th - 18th February 2020, 14