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Research

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**Title:**

**Ecosystem services and dis-services in the agricultural landscapes of the AndeanAmazonian piedmont in the department of Meta, Colombia: Case study CBB infestation in relation to landscape structure, farm features and agricultural management practices in Uribe, Meta.**

**Abstract :**

Ecosystem services (ES) are benefits for human through transformation of natural resources and are provided by biodiversity. However, biodiversity can be a driven force of some ecosystem disservices such as pest development. Natural pest regulation is one of the most desirable (ES) and can be different at landscape and plot scale depending on many factors such as landscape complexity, plant diversity and agricultural management practices on a productive system. Agroforestry productive systems aims to incorporate plant diversity and enhance ES such as pest regulation, which is the case of the “Colombian Agroforestry System”, proposed as a sustainable alternative solution for coffee growers’ families to enhance economic income and respect ecological processes. In Colombia, the Andean-Amazonian piedmont is a region immersed on a politic context were armed conflict, illicit crops and forced displacement had occasioned accelerated deforestation, changes on territorial dynamics and expansion of the agricultural frontiers, were coffee growers found an alternative to their agricultural activities planting coffee under the forest, transforming conventional systems into agroforestry ones. However, coffee in this region is classified as a “low marginal zone”, where conditions are suboptimal and abiotic factors such as precipitations, temperature, and altitude cause changes on coffee pest’s dynamics, such as the principal one on this crop: the coffee berry borer (CBB). For the above, CBB infestation was evaluated in relation to landscape structure, farm features and agricultural management practices in 11 selected farms on the Adean-Amazonian piedmont, municipality of la Uribe, Meta Department. Landscape structure was characterized, and percentage of simplified cover landscape units were calculated. Farm features and agricultural management practices were identified by a survey made to the farmers. Assessing CBB infestation was done following the methodology proposed by Vilchez-Mendoza (2021) and NIB and BCB indices were calculated, and it was complemented by CBB trapping using CBB traps for capture individuals (abundance). Explanatory data for landscape structure and farm features was done, and lineal regression model and significance test were run. Any of the simplified landscape units had strong correlations neither significance on CBB infestation (indices and abundance) on the farms, indicating that landscape structure doesn’t explain CBB infestation. Same results were obtained for farms features such as type of coffee systems. As a conclusion, CBB infestation in the 11 selected farms on the Andean-Amazonian piedmont can be associated to other factors such as precipitations and temperature, which are recommended to measure on futures studies. Also, agricultural management can highly influence infestation, recommending focusing the attention on IMP

practices with coffee growers on this zone, highly affected by low technification. Futures studies are needed to improve coffee production on this potential coffee-producing region in Colombia..

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