

## 51.Spatial structure of forest trees in tropical agroforests

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In the context of the ongoing destruction of tropical rain forests, the potential value of tropical agroforests as a model of agricultural sustainability has increased. Tropical agroforests consist in complex associations of trees and crops. However few studies dealt with spatial structure of forest trees in tropical agroforest systems and their similarity to spatial organisation of trees in forest ecosystems. Our aim is to analyse the spatial structure of forest trees in tropical agroforests. We used a classical method of spatial statistics: Ripley's K-function. We linked the different spatial organisation of trees with diversity of associated plants (ecological performance) and to pest and diseases pressure (agronomical performance).

This paper focuses on 36 plots in a tropical cocoa based agroforest in the region of Talamanca (Costa Rica). Forest trees were not significantly present in 7 plots; randomly distributed in 15 plots; regularly distributed in 8 plots; clustered in 6 plots. The clustered structure of forest trees was correlated with a higher diversity in associated plants in the studied stand, and with a the highest pest and diseases pressure. We discuss advantage and drawback to introduce structural characteristics of forest in cropping systems.

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