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The mesoscale distribution patterns of six abundant tree species on Maracá Island, Brazilian Amazonia: are monodominance of Peltogyne characterised by unusual soils?

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The tropics are widely renowned for their spectacular plant diversity. The occurrence of one or a few species dominating large areas of tropical forest was until the mid-*1980's* considered uncommon. An interesting case study is that of *Peltogyne gracilipes* Ducke that forms the only monodominant forest that has been described in the Amazon Basin. Previous studies had suggested that *Peltogyne* forest is related to lower slopes, poor drainage and high soil Mg concentrations. All these studies are based on small scale analyses, with no evidence that this pattern occurs at a mesoscale. To assess whether the monodominance of *Peltogyne* is related to environmental factors we examine the response of the *P. gracilipes*, and other five abundant tree species (*Astrocaryum aculeatum*, *Attalea maripa*, *Ecclinusa guianensis*, *Licania kunthiana* and *Pradosia surinamensis*) on Maracá Island in relation to soil attributes using the standard RAPELD grid system for intensive studies of 25 km^2 square of the Program for Biodiversity Research (PPBio). In the grid there are thirty regularly-spaced plots of 1 ha without a fixed shape, but having a 250 m center line that follows the topographic isoclines. Plot of 20 m x 250 m of the left side of the center line was used for sampling trees ≥ 30 cm DBH (0.5 ha) and plot of 10 m x 250 m (0.25 ha) was used for sampling trees ≥ 10 cm DBH. A CCA (canonical correpondence analysis) was used to analyse the relationship between species abundance and soil variables. Altitude (r= 0.80) and understory height (r= 0.55) were the variables significantly positively correlated with axis I of ordination, while Mg (r= -0.67) and Fe (r= -0.65) were negatively correlated. The soil variables showed a weaker relation with axis II. Canopy height (r= 0.34) and pH (r= 0.30) were the variables that showed the highest correlation coefficients with this axis. Results indicate that there is a sharp relationship between soil traits and the monodominance of *Peltogyne*.