



Soil Fertility and Radicular System Depth of Sand Coastal Plain Forest

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The sand coastal plain vegetation (Restinga Forest) is a type of ecosystem associated with the Atlantic Forest constituted of mosaics, which occur in areas of great ecological diversity. This vegetation is currently assigned as edaphic communities. In this study we present data on soil fertility in different vegetation physiognomies to discuss on abiotic factors related to Restinga Forest stability and recovery potential.

This work was carried out in several points of Restinga Forest in the litoral coast of the state of São Paulo, namely: State Park of the Serra do Mar, Picinguaba, in the city of Ubatuba ($23^{\circ}20' S$ / $44^{\circ}48' W$); State Park of Anchieta Island, in the city of Ubatuba ($45^{\circ}02' S$ / $45^{\circ}05' W$ / $23^{\circ}31' S$ / $23^{\circ}45' W$); Restinga Forest in the residential joint ownership Riviera of São Lourenço, in the city of Bertioga ($46^{\circ}08' S$ / $23^{\circ}51' W$); Ecological Station Juréia-Itatins, Ecological Station of Chauas , in the city of Iguape ($24^{\circ}45' S$ / $47^{\circ}33' W$) and State Park of Cardoso Island, Pereirinha Restinga Forest, in the city of Cananéia ($25^{\circ}03'05'' S$ / $25^{\circ}18'18'' W$ / $47^{\circ}53'48'' S$ / $48^{\circ}05'42'' W$), Brazil. Sampling was carried out as follows in every area above mentioned. One sample was made of 15 subsamples of each area collected in each depth (one in 0 – 5, 5 – 10, 10 – 15, 15 – 20, and another in 0 – 20, 20 – 40, 40 and 60 cm). Soil characteristics analyzed were pH, P, Na, K, Ca, Mg, S, H + Al, Al, B, Cu, Fe, Mn, Zn contents and base saturation, cation exchange capacity and aluminum saturation.

All areas investigated showed very low contents of phosphorous, calcium and magnesium. The base saturation, less than 10, was low due to low amounts of Na, K, Ca and Mg, indicating low nutritional reserve into the soil. The nutritional reserve is present primarily in a depth of 15 cm, although mainly in the vegetable biomass. The level of calcium and magnesium were mainly low in the subsurface soil layer, associate with high concentration of aluminum, representing important limiting factor to the root system development in depth (≤ 15 cm). The aluminum saturation values to Restinga Forest reach 80% in depth and calcium varying from 1 to 2 mmolc dm⁻³. On this view, important questions on Restinga Forest development appears, mainly about species tolerance to aluminum in the soil and about the possibility of initial vegetative improvement as a function of soil fertility increasing, specially because low calcium and high Al decrease the root system development. Comparing the aluminum levels in the root and leaves to *Psidium cattleyanum* Sabine and *Gomidesia Fenzliana* O. Berg, the values were very superior in the leaves, indicating that aluminum is not maintained in the root system, being translocated to leaves.