Physical and mechanical properties of the peach palm (*Bactris Gasipaes Kunth*) as a structural composite material

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Integral part of sustainable development is to make structural applications with native materials. One example is the diversity of palms that grow in the Latin America tropics, material of indigenous constructions and others uses. However, the use of natural materials is limited to cultural traditions with little or no standardization. To develop sustainable and structural materials, will be evaluated the traditional construction techniques in terms of engineering standards and improve equivalent design methods to optimize the structural performance. This work presents results of "micro-structure", "meso-structure" and "macro-structure" for two ages groups of palm stem *Bactris gasipaes Kunth* commonly known "Peach Palm or Pupunha". Optical microscopy was performed for the micro-structural analysis. Digital Image Processing was used to characterize the macrostructure, the variation of fiber volume fraction and representative volume element (RVE). Furthermore, experimental research is conducted to determine basic physical properties (moisture and specific gravity) and mechanical properties to tension, bending and torsion, generating as results the maximum tensile Strength (TS), the tensile modulus of elasticity (TMOE), bending modulus of elasticity (BMOE) and Modulus of Rigidity (MOR).

Bactris gasipaes Kunth; Natural composite material; Structural Composite Material; Non-Conventional materials and technologies.