INFLUENCE OF MOISTURE CONTENT IN THE COMPRESSION STRENGTH OF GUADUA ANGUSTIFOLIA BAMBOO CULMS

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ABSTRACT

The development of what is known as unconventional materials has become a need in civil engineering, mainly in American countries, which have great natural wealth and where the housing crisis is assuming ever greater proportions. One of the most widely available natural materials in Colombia is the bamboo species Guadua angustifolia Kunth, whose use is standard for structural purposes when it is in the log state. However, it is known that natural materials during their useful life are subject to the occurrence of dimensional changes when its moisture content varies below the saturation point of the fibers and for different moisture contents moisture balance region concerned. The percentages of contraction, radial, and tangential longitudinal fibers are known for structural use wood, however to date it is still necessary to deepen the knowledge of all effects (contractions and expansions) that may occur in the Guadua when their moisture conditions change. In this paper the recommendations of the Colombian Technical Standards are applied to evaluate the influence of moisture content on the strength of bamboo culms with aged between 4 and 6 years, preserved and treated according to current standards in Colombia. The work focuses on determining the strength parallel to the fibers of bamboo culms plump equipped laboratory and moisture content varying between 10% and equilibrium moisture content established to Bogota city, determining the module average elasticity, the 5th percentile and minimum for each trial group. The resistance variation curves as a function of moisture content are presented.

KEYWORDS: bamboo, mechanical properties, moisture content, natural materials, physical properties