

Experimental Investigation of Physical Properties of Bambusa Oldhamii and Yushania Alpina on the Influence of Age and Harvesting Season

Authors : Tigist Girma Kedane

Abstract : The purpose of the current research work is to measure the physical properties of bamboo species in Ethiopia on the impact of age, harvesting seasons and culm height. Three representatives of bamboo plants are harvested in three groups of ages, 2 harvesting months, and 3 regions of Ethiopia. Research has not been done on the physical properties of bamboo species in Ethiopia so far. Moisture content and shrinkage of bamboo culm increase when the culm ages younger and moves from top to bottom position. The harvesting month of November has a higher moisture content and shrinkage compared to February. One year old of Injibara, Kombolcha, and Mekaneselem bamboo culm has 40%, 30%, and 33% higher moisture content, 29%, 24%, and 28% higher radial shrinkage, 32%, 37%, and 32% higher tangential shrinkage compared to 3 years old respectively. The bottom position of Injibara, Kombolcha, and Mekaneselem in November have 45%, 28%, and 25% higher moisture content, 41%, 29%, and 34% radial shrinkage, 29%, 28%, and 42% tangential shrinkage than the top position, respectively. The basic density increases as the age of the bamboo becomes older and moves from the bottom to the top position. November has the lowest basic density compared to February. 3 years old of Injibara, Kombolcha, and Mekaneselem at the age of 3 years have 32%, 50%, and 24% higher basic density compared to 1 year, whereas the top position has 35%, 26%, and 22% higher than the bottom position in February, respectively. The current research proposed that 3 years and February are suited for structural purposes and furniture making, but 1 year and November are suited for fiber extraction in the composite industry. The existence of water in the culm improves an easy extraction of the fibers without damage from the culm.

Keywords : bamboo age, bamboo height, harvesting seasons, physical properties

Conference Title : ICMSMS 2024 : International Conference on Material Strength and Materials Science

Conference Location : Mexico City, Mexico

Conference Dates : April 04-05, 2024