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Comportamiento viscoelástico de la madera de Prosopis sp
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Abstract

Wooden structural elements that support permanent loads bear mechanical strains. This indicates the viscoelastic nature of this material. In order to guarantee the structures reliability it is necessary to predict the elastic and viscous response of wood in service. The objective of this research is to show the viscoelastic nature of wood, which in turn is manifested by the difference between the Static and Dynamic Modulus of Elasticity values of a standard sample of Prosopis sp. wood. Non-destructive tests were carried out by following two procedures: transverse flexural vibration and static bending. Results showed that the Static Modulus of Elasticity (MOE) is a good predictor of the Dynamic Modulus of Elasticity (Ed) and viceversa. In addition, the high coefficient of correlation found between these parameters denotes that if the value of MOE of Prosopis sp. wood increases, the value of its Ed increases proportionally. The dynamic tests were reliable, fast and the parameters measured were more repetitive in contrast with the Static tests. This research was a case study. As a consequence of this study, the methodology for studying other wood species with different specimens geometry is possible.

Keywords

Static and dynamic Modulus of Elasticity, Prosopis, viscoelasticity.