USE OF MIXED MODELS TO DEVELOP SITE INDEX EQUATIONS FOR *Tectona grandis* PLANTATIONS IN VENEZUELA'S WESTERN PLAINS

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Site index is the most used technique for classifying sites according to their productivity in forest plantations. Site index is commonly defined as the height attained for a sample of the largest trees in a stand at a certain reference age. The best data for developing site index curves consist on repeated measurements on permanent plots, however, these measurements are rarely available for the range of sites in which a tree species can be planted. Temporary plots are more readily available for various ages and locations, but derived site index equations are less reliable.
In this work we use a combination of temporary and permanent plots for developing site index equations teak plantations from Venezuela. This type of data set makes the application of the ordinary general linear model unsuitable as variances are not homogeneous. Mixed models are good alternatives since they permit modeling covariance structures. Several non-linear models were fitted. Three different parametrizations were used: 1) original, assuming random asymptotes, 2) reparametrized so that the local factor is the asymptote, y 3) reparametrized so that the local factor is the parameter associated with the function's domain. In the last two cases the largest height has an associated random effect.. The best fitting guide curve was obtained with a mixed-model Chapman-Richards equation. Curves varied considerably in shape for a same model when different parametrizations were used.