

ESTIMATION OF EUCALYPTUS HEIGHT BY MEANS OF NONLINEAR REGRESSION AND ARTIFICIAL NEURAL NETWORKS

Diogo Guido Streck VENDRUSCOLO¹

Ronaldo DRESCHER¹

Hudson Santos SOUZA¹

Jhonny Pinto Vieira Mendes MOURA¹

Fernanda Meyer Dotto MAMORÉ¹

Tiago Altobelle da Silva SIQUEIRA¹

- **ABSTRACT:** *In this work was evaluated the nonlinear regression modeling and artificial neural networks to estimate the eucalyptus trees tall. The stands are located in Itiquira, MT. Data were obtained from 23 parcels measured at four years old. The database was divided into two sets, one for the adjustment of regression models and training the networks (70%) and the other to validate the regression and validating the trained networks (30%). The nonlinear regression model was used the Gompertz and the networks of the multilayer perceptron (MLP). The evaluation of the estimates accuracy was by the multiple correlation coefficient between the observed and estimated heights, square root of the average error in percentage and graphical analysis. Both evaluated techniques are effective for predicting the height of trees. However, neural networks statistical criteria showed slightly higher relative to the regression.*
- **KEYWORDS:** *Afforestation; forest inventory; prediction.*

¹Universidade Federal de Mato Grosso - UFMT, Campus Cuiabá, Departamento de Engenharia Florestal, CEP: 78060-900, Cuiabá, Mato Grosso, Brasil. E-mail: diogoguido@hotmail.com; ronaldodrescher@gmail.com; HUDSON.SSH@HOTMAIL.COM; JHONNYVIEIRAMENDES@GMAIL.COM; fernandamdotta@hotmail.com; tiagosika@gmail.com.