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Site Productivity of Clone and Seed Raised Plantations of *Eucalyptus urophylla* and *Eucalyptus grandis* in Southeast Mexico

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ABSTRACT

The relationship between soil variables and forest productivity of *Eucalyptus urophylla* (Eu) and E. *grandis* (Eg) was studied in commercial forest plantations (CFP) in Huimanguillo, Tabasco, Mexico. The group of Eu included seed and clone raised plantations and the Eg group included only seed raised plantations. Tree measurements and soil sampling were carried out at 56 500-m2 plots. Two soil depths (0 - 20 and 20 - 40 cm) were sampled and analyzed for physical and chemical properties. Site Index (SI), calculated at year 14 was used as indicator of forest productivity. Simple correlation, multiple and second order regressions were used to test the effect of soil variables on productivity. Results showed that mean annual increments (MAI) of Eu and Eg were comparable to other regions of the world reaching 49 m3 · ha-1 · y-1 across a range of low to high soil fertility gradient (15 to 80 m3 · ha-1 · y-1). For both species, regardless of the production method (seed or clone), soil texture was the most relevant variable to explain variation in productivity. Eu productivity was correlated to exchangeable Mg (0.3) and Al (0.3) in the 0 - 20 cm soil depth and CEC (0.4) and exchangeable Al (0.6) in the 20 - 40 cm soil depth. Compared to clone plantations, seed plantations showed higher correlations between soils properties and productivity. Aluminum saturation was negatively related to Eg productivity. The highest correlation between soil and productivity were found for Eg, with soil P-availability and aluminum saturation explaining 82 and 85% of the variation, respectively. This works shows that low fertility soils, previously used as pasturelands can be productive for forest plantation purposes and contribute to carbon sequestration.

KEYWORDS

Forest Plantations; Forest Soils; Site Index; Fast Growing Species

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