Acclimatisation of White Laran (Neolamarckia cadamba Roxb. Bosser) and Binuang (Octomeles Sumatrana Miq.) seedlings to water-logged and water-stress conditions

ABSTRACT

Although practices that employ native species in plantation systems are common, the study of Neolamarckia cadamba Roxb. Bosser (White Laran) and Octomeles sumatrana Miq. (Binuang) in below-ground parameters is limited. The present study was conducted to compare the initial growth performance and below-ground parameters between these two native trees under waterlogged and water-stress conditions. The study was conducted near the greenhouse of the Faculty of Tropical Forestry (Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia) for three months. Fifty seedlings of each species were grown in one-meter rhizotrons under Complete Randomized Design (CRD) with three different treatments: water stress (T1), water-logged (T2), and control (T3). Height and root collar diameter (RCD) increments, leaf area index (LAI), dried shoot biomass (DSB), root depth (RD), root intensity (RI), root biomass (RB), specific root length (SRL), and root length density (RLD) were recorded. The outcome plainly demonstrated that N. cadamba seedlings were adaptive to both treatments, but O. sumatrana seedlings were more sensitive to water-logged than water-stress conditions. No significant difference was observed between aboveground and below-ground parameters. In conclusion, N. cadamba and O. sumatrana can potentially survive in these conditions in plantations.