

Soil Characterisation Assessment of the *Acacia mangium* Plantation at Dakoura, Linden

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Research suggests that bauxite mining causes extensive damage to soils, alters microbial communities, and affects vegetative health. At the Dakoura mined-out site at Linden, Upper Demerara-Berbice (Region X), reclamation work by the Guyana Geology and Mines Commission aimed to re-establish ecological integrity at this disturbed area. *Acacia mangium* was selected for site reclamation due to its ability to restore soil fertility and cope in extreme conditions, such as highly acidic soils. This study assessed the effects of *Acacia mangium* on the physiochemical soil properties at Dakoura, two years after its introduction at the site. Soil samples were retrieved from two locations: within the *Acacia mangium* plantation, and adjacent zones to the plantation. Top soil was sampled using an auger at 0-15 cm depth, and the measured parameters were soil pH and organic matter content. The results indicated that soil pH and organic matter content increased with the presence of *Acacia mangium*. Soil pH ranged from 5.1 to 7.5 (within the plantation) and 3.9 to 6.8 (adjacent zones). Organic matter content ranged from 4.19 to 8.36 percent (within the plantation) and 0.36 to 15.1 percent (adjacent zones). It was determined that the maximum readings recorded at the adjacent zones were caused by a waterlogged pond within that particular zone, which slowed anaerobic decomposition of organic material. These findings suggest that *Acacia mangium* can improve soil quality following intensive mining activity, and should continue to assist the Dakoura Mine reclamation effort.

Keywords: *Acacia mangium*; soil physiochemical properties; bauxite mining; reclamation