

# EFFECTS OF SELECTED SOIL PHYSICAL CHARACTERISTICS ON THE GROWTH AND SURVIVABILITY OF PLANTED *SHOREA MACROPHYLLA* (DE VRIESE) ALONG RIVERBANKS OF BATANG KAYAN ULU, LUNDU, SARAWAK

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## INTRODUCTION

Environmental degradation is proceeding at an unprecedented rate in many tropical regions, jeopardizing prospects for conservation of biological diversity and sustainable economic development of agricultural and forest resources (Parrotta 1991). Anthropogenic activities such as timber extraction, shifting cultivation and the establishment of commercial plantations have led to the conversion, fragmentation and degradation of tropical rainforests ([Whitmore 1998](#); [Curran et al. 2004](#); [Wright 2005](#)). Reforestation via plantation forestry is vital not only for meeting wood demands by decreasing pressure on natural forests but also as a technique that can restore degraded soils resulting from deforestation. These days, degraded forest lands which consist of secondary vegetation are becoming predominant and important forest types in the tropical countries due to the paucity of natural forests. Reddy (2002) reported that reforesting such areas under artificial planting is essential and indispensable to prevent further soil degradation. Most of the previous studies on enrichment planting have focused on growth performance of planted species along with the planting technique, species selection for planting purposes in relation to the growth productivity at degraded forest with less attention on the ecosystem involving soil physical status under reforestation area ([Arifin et al. 2008](#); [Wasli et al. 2014](#); [Perumal et al. 2015](#)). Information and empirical data on soil characteristics under degraded vegetation are rather limited, even though several studies on the soil properties of humid tropics in Sarawak have been conducted ([Ishizuka et al. 2000](#)). Therefore, the purpose of the present preliminary study is to determine the effects of selected soil physical characteristics on the growth and survivability of planted *Shorea macrophylla* along riverbanks of Batang Kayan Ulu, Lundu, Sarawak.

## MATERIALS AND METHODS

### ***Brief Information on Sampadi Forest Reserve Reforestation Sites along Riverbanks of Batang Kayan Ulu, Lundu, Sarawak***

Sampadi Forest Reserve reforestation sites (N01°34'13''E109°53'12'') is located along the riverbanks of Batang Kayan Ulu, Lundu, Sarawak which is approximately 72 km from the southwest of Kuching city. It covers about 5,163 hectares and has a humid tropical climate, associated with peaks of seasonal changes of rainfall and temperature ([Perumal et al. 2015](#)). The topography at the study site was of low undulating with an average elevation of 87 m above sea level. It has a tropical seasonal climate (no dry season) with all months receiving on average more than 100 mm with a subtropical wet forest biozone ([Vincent and Davies 2003](#)). The climate condition in the area was classified into AA'r on the Thornthwaite classification system ([Thornthwaite 1948](#)). The average annual temperature in the area ranges between 22°C